

Merry Christmas and A Happy New Year

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ISSUE
Pages 9-16

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WEEKLY NEWSPAPER FOR THE FARM CHEMICAL MANUFACTURER, FORMULATOR AND DEALER

Published by The Miller Publishing Co., Minneapolis, Minn.

Vol. 3

Accepted as Controlled Circulation
Publication at Minneapolis, Minn.

DECEMBER 24, 1956

Subscription Rates:
\$5 for 1 year, \$9 for 2 years

No. 52

ICC Gives Railroads Requested Increase In Freight Tariffs

Long and Short Hauls
May Be Done by Truck
As Rail Rates Rise

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON, D.C.—The Interstate Commerce Commission last week lowered the boom on shippers of commodities, in granting a 7% boost on freight rates for eastern territory, and 5% for western conference territory.

For the fertilizer industry with its heavy bulk shipments, the ICC gave a token concession when it approved a hold-down of such percentage increases to not more than 50¢ per ton on potash and other bulk fertilizer rate advances.

Nevertheless the rate increase now approved by the ICC is merely a starting point in much larger freight rate charges which will be subject to ICC consideration and approval later.

Informed opinion here is that carriers will probably ask at least another 25% advance in their tariffs, and it is considered likely that they will get it.

For the fertilizer industry, this new higher rate of freight charges
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Better Production Techniques Outlined at Cotton Conference

— See Also Story on Page 5 —

BIRMINGHAM, ALA. — Problems of weed control, fertilization, control of insects and defoliation techniques were on the agenda of the second annual Beltwide Cotton Production Conference held at the Dinkler-Tutwiler Hotel, Birmingham, Dec. 13-14. Sponsored by the National Cotton Council of America in cooperation

with land-grant colleges, the agricultural chemical industry, the USDA, and other groups, the meeting featured speakers representing these organizations and attracted hundreds of persons from the entire cotton-growing area of the U.S.

The control of insect pests in cotton occupied a prominent portion of the meeting, with discussions center-

ing around materials, application methods, research, and insect resistance to insecticides.

Dr. E. F. Knipling, chief of the entomology research branch, USDA, Beltsville, Md., told the group that more basic research is needed in at least three areas: chemical control, cultural and biological control, and in developing plants which are resistant to insect attack. He said that the cotton industry had been so busy "putting out insect fires," that not enough time has been available to maintain a favorable balance in the "bank of information" which is built up through fundamental research.

He declared that it has been necessary to exploit applied research as an expediency to achieve the high degree of productivity the industry now enjoys, but in so doing, "we have also been reworking our fundamental research to the point

(Continued on page 4)

★ ★ ★

USDA Reports Progress in Use Of Systemics

BIRMINGHAM, ALA. — Experiments with systemic insecticides as a seed treatment to protect cotton against early-season pests are progressing successfully, the U.S. Department of Agriculture has announced.

Results of 1956 tests of the systemics in 12 southern states were reported Dec. 14 at the National Cotton Council's Beltwide Cotton Production Conference here by K. P. Ewing of USDA's agricultural research service. Mr. Ewing commended state and federal entomologists and industry for

(Continued on page 21)

TVA Announces Process that Trims Time To Produce Super for Mixed Fertilizer

KNOXVILLE — The Tennessee Valley Authority announced Dec. 19 that it has developed a process for shortening the time to produce superphosphate suitable for immediate use in mixed fertilizers.

TVA said that in its pilot plant at its Wilson Dam, Ala. fertilizer

works it has produced the material for immediate use in mixed fertilizers in 60 minutes and has made the final mixed fertilizer in 90 minutes. The process is ready for industry use.

The process cuts to one hour the curing period, normally two to six weeks, for superphosphate before it is used in production of mixed fertilizer. This is done by using finer phosphate rock and more acid.

"With about 30 minutes for mixing and other operations, the total time for producing finished products is only 1½ hours instead of several weeks," TVA said.

"The use of this development would permit the manufacturer to turn out his mixed fertilizers on a current basis and eliminate or reduce his large inventory of superphosphate in storage. Furthermore, a better product would result, because the method promotes higher water solubility and better granulation.

"The new technique could be applied in many fertilizer plants without extensive modifications of equipment. Some plants already have part of the necessary equipment and would find conversion to the speedy and continuous process a fairly simple matter."

Pacific Northwest Group Opposes Guarantee Change

PORTLAND, ORE.—The board of directors of the Pacific Northwest Food Assn. recently passed a resolution placing the association on record against changing the expression of guarantees to an elemental basis. The vote was unanimous.

The board also voted against proposed amendments to the Washington Fertilizer Law on the grounds that where it was intended to clarify existing statute, it would be discriminatory in naming products specifically.

The Board also approved scholarships of \$100 again to outstanding students at Oregon State College, Washington State College and the University of Idaho.

Fertilizer Tonnage Down 4.4% in 1955-56

— See Tables on Page 20 —

WASHINGTON — Fertilizer consumption in the U.S. during the fiscal year ended last June 30 totaled 19,980,264 tons, the National Plant Food Institute estimates.

This is a little less than one million tons, or 4.41%, under comparable figures for 1954-55 from the U.S. Department of Agriculture fertilizer consumption report.

Although the 1955-56 tonnage is down, preliminary estimates indicate that total use of primary nu-

trients probably was as great as or greater than in 1954-55, NPFI said.

The institute estimates that the average nutrient content of a ton of fertilizer was just under 29% in 1955-56. This compares with 20.3% in 1939 and 27.9% in 1954-55.

The institute estimate was compiled by William S. Ritnour, treasurer. It includes ACP and TVA farm test demonstration distribution, but is exclusive of limestone, phosphate rock, colloidal phosphate, secondary

and trace elements, gypsum, sulfur and other soil amendments.

The greatest percentage decrease tonnage-wise is in the West North Central states, a drought area. The decrease in this area amounted to 12.71%. Only the western states recorded an increase in 1955-56, and this was only a scant quarter of one percent.

Twelve individual states and the District of Columbia showed 1955-56 increases over 1954-55, however. These states were Arkansas, Cal-

ifornia, Colorado, District of Columbia, Florida, Mississippi, Montana, Nevada, North Dakota, Oklahoma, Vermont, West Virginia and Wyoming.

The largest percentage of increase by any one state was recorded by Nevada, with 71.62%. Even so, 1955-56 tonnage of that state was less than in 1953-54. The largest percent of decrease by any one state was in drought stricken Nebraska, with 38.34%.

Fertilizer consumption in each of

(Continued on page 20)

USDA Urges More Nitrogen and Lime for Southeast Cotton Land

**100 lb. N an Acre
Will Pay on Better
Soil, Studies Show**

WASHINGTON—Research studies show that higher yields of cotton per acre—and consequent lower costs of production—can be achieved in the Southeast by substantially increasing the use of nitrogen and lime on cotton land, the U.S. Department of Agriculture reports.

Studies of cotton soils and nutrients required for producing cotton at a rate exceeding one bale per acre have been conducted by USDA's Agricultural Research Service and soil scientists of the State Agricultural Experiment Stations at Stoneville, Miss., and Thorsby, Ala.

Results show that it will pay farmers with better cotton soils to step up their use of nitrogen to 4 times the present average annual rate of 26 lb. an acre, USDA said. The studies indicated also that, for greatest yield benefit, phosphorus, potash and sulfur should be applied in accordance with soil-test recommendations, and adequate liming should be done to offset the increased soil acidity created by heavier use of nitrogen.

The studies stress the need for proper placement of fertilizers to prevent seedling damage and still make the fertilizers available to young plants.

In their virgin condition, soils of the Southeast were acid, low in nitrogen and potash, and deficient in phosphorus. The need for nitrogen will continue to be a problem in these soils, USDA said. Cotton plants take up about 100 lb. of nitrogen per acre to produce the first bale, and each succeeding bale requires at least another 30 lb. Rates of application should be increased materially if yields above a bale per acre are expected.

In experiments at the Delta Branch Station at Stoneville, Miss., yield increases were consistently obtained in the better cotton years by nitrogen applications of 100 lb. or more per acre. Few previous field experiments have shown much response to nitrogen applications exceeding 60 lb. an acre, but on many experimental plots yields of a bale or less per acre have resulted from a combination of environmental factors.

For this reason, high rates of nitrogen application should be the rule only when all growth conditions can be controlled sufficiently to make possible 2 bales or more per acre, said USDA. This would mean control of soil acidity, nematodes, insects, moisture and temperature conditions, and other environmental factors that may combine to reduce yields.

In experiments at Thorsby, Ala., in 1955 and 1956, nitrogen applications at the rate of 360 lb. were used without damage to the cotton on irrigated and non-irrigated plots. Yields were not reduced either year by the highest rates of moisture and nitrogen applications. Other results of these experiments were more lush vegetable growth, with consequent delayed maturity and a need for bottom defoliation and more intensive weevil control. These, of course, were not desirable results, but they serve to point up the fact that with modern machines and methods to cope with such conditions, there need be little fear of applying too much nitrogen, USDA said.

The need for adequate liming, the studies show, is as great as the need for nitrogen. Soil test summaries in the Southeast show that one-third to

one-half the soils are too acid for the best growth of cotton without liming.

Recent field experiments have demonstrated also that adequate liming, even on soils not strongly acid, will increase yields of seed cotton by as much as 500 lb. an acre. Lack of lime contributes to development of "crinkle leaf" in cotton plants, a condition apparently increasing in Arkansas, Louisiana, Mississippi and Alabama.

American Cyanamid Redesignates Agricultural Chemicals Division

NEW YORK—American Cyanamid Co. has announced that its agricultural chemicals division is being redesignated the nitrogen and allied products division with jurisdiction over bulk sales of fertilizers, insecticides and mining chemicals.

F. S. Washburn will be general manager of the division.

The firm also announced the formation of a new farm and home division, which will handle animal feed sales, veterinary products, packaged insecticides and other agricultural chemicals. This new division will be formed by transferring the animal feed and food industry departments from the fine chemicals division and the veterinary products line from the Lederle laboratories division. A. B. Clow, formerly general manager of the fine chemicals division, will be general manager of the farm and home division which goes into operation Jan. 1.

K. C. Towe, American Cyanamid Co. president, also revealed plans to construct a 600-acre agricultural center near Princeton, N.J. The center will include modern laboratories for developing animal feed products and an experimental farm where such products can be tested.

W. B. Copeland, Smith-Douglass Vice President, Resigns

NORFOLK, VA.—W. B. Copeland, executive vice president of the Smith-Douglass Co., Inc. since 1954, has resigned effective Dec. 31, company officials have announced. Mr. Copeland will announce his future business plans at a later date.

A native of Norfolk, Va., Mr. Copeland attended Virginia Polytechnic Institute, graduating in 1932 with a B.S. in chemical engineering. He started to work for Smith-Douglass in that year and served in various capacities, including seven years as manager of their Streator, Ill., plant. In 1948, he was named a vice president and placed in charge of Smith-Douglass Midwest operations.

He lives with his wife and two sons at Poplar Hall on the Elizabeth River in Princess Anne County, Va.

FARM SHOW

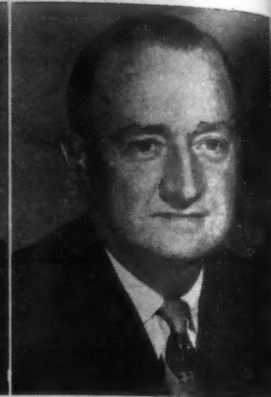
BROOKINGS, S.D.—"Family Farming for '57," a traveling educational farm show prepared by the South Dakota Extension Service, will visit 24 towns and cities in South Dakota during a six-week tour, Jan. 15 through Feb. 22. The show is designed to bring helpful information on agriculture and homemaking subjects to the people of the state. Extension subject matter specialists will attend the 11 booths during the free showings. They will represent the fields of crops, soils, livestock, gardening, nutrition, farm machinery and buildings, dairy, poultry, entomology, farm management and marketing, and family life and home management.



Ed M. Kolb



Al J. Dirksen



William M. Clines

American Potash Realigns Eastern Sales Department

LOS ANGELES—A realignment of the eastern sales department of American Potash & Chemical Corp. into two operating groups has been announced by William J. F. Francis, vice president in charge of sales.

Under the new arrangement the department will operate as a heavy chemicals division and an industrial chemicals division. Ed M. Kolb has been named as general sales manager of the heavy chemicals division, while Dr. Al J. Dirksen, formerly director of AP&CC's market development department, has been appointed general sales manager of the industrial chemicals division. Their headquarters will remain at the company's eastern general sales office in New York.

William M. Clines, formerly western sales manager, was named general sales manager, western, to

handle all company sales in the western area. Mr. Clines will continue to headquarter at AP&CC's executive offices at Los Angeles.

Mr. Francis said the changes were made because of American Potash & Chemical Corp.'s steadily-expanding sales activity throughout the United States.

"Net sales during the past decade have risen nearly 400%—from less than \$11,000,000 in 1946 to nearly \$20,000,000 during the first half of 1956," Mr. Francis said.

The heavy chemicals division will be responsible for AP&CC's eastern sales activities in borax, potash and sodium sulfate (salt cake), as well as the administration of the company's export department and the British subsidiary, Borax & Chemicals, Ltd.

The new industrial chemicals division will handle company eastern sales for lithium, boron, Tronacarb, electrochemicals such as chlorates, perchlorates and manganese dioxide, as well as all new product marketing.

PHYTOPATHS ELECT OFFICERS

CINCINNATI, OHIO—Dr. George Fischer, Washington State College, Pullman, Wash., was elected president of the American Phytopathological Society at the group's recent meeting at the Netherland-Hilton Hotel here. President elect, to take office at next year's annual convention, is Dr. Paul R. Miller, U.S. Department of Agriculture, Beltsville, Md. Dr. Glenn S. Pound, University of Wisconsin, Madison, was named vice president; Dr. Roy Young, Oregon State College, Corvallis, councilor-at-large; and Dr. William Hewitt, University of California, Davis, was made secretary. A report of the meeting appeared on page 18 of the Dec. 17 issue of Croplife.

Wyman L. Taylor in New Stauffer Post

SAN FRANCISCO—Wyman L. Taylor has been made administrative assistant to the vice president, Pacific Coast, of Stauffer Chemical Co. Mr. Taylor, a graduate of the University of California in chemical engineering, joined Stauffer in 1946. He had been northern California sales manager, industrial chemicals, prior to his promotion.

William H. Oliver has been named northern California sales manager replacing Mr. Taylor. Mr. Oliver has been with Stauffer for 16 years, and resides in Berkeley. Both men are headquartered in Stauffer's San Francisco office.

Arthur M. Gladstone In New Nopco Post

HARRISON, N.J.—Nopco Chemical Co. has announced the appointment of Arthur M. Gladstone as technical manager of the agricultural chemicals department. Mr. Gladstone, formerly of the industrial market development department, will be responsible for guiding the development and sales of Agrimuls, Nopco's line of emulsifiers for agricultural toxicants and herbicides.

Oscar E. Clary Named Diamond Black Leaf Plant Manager at Louisville

CLEVELAND—Oscar E. Clary, plant manager of the Richmond, Va. plant of Diamond Black Leaf Co. since March, 1955, has been named to a similar post at the firm's Louisville, Ky. plant, it was announced recently by George V. Dupont, general manager.

Mr. Clary's successor at Richmond is Julian R. Trocki, who has been assistant plant manager of the Newark, N.J. plant of Diamond Alkali Co., an affiliate organization, for the past two and a half years.

Mr. Clary joined Diamond Black Leaf in March, 1955, when the company was organized to take over the manufacture and marketing of the Black Leaf brands of insecticides, herbicides and fungicides for commercial growers and home gardeners.

Previously, he had held supervisory responsibilities for a number of years at Richmond for Virginia-Carolina Chemical Corp. and with its predecessor, Tobacco By-Products and Chemical Corp. A native of Richmond, he studied at Virginia Mechanics Institute School of Technology.

Mr. Trocki takes over his new assignment with 10 years' chemical production experience. He joined Diamond Alkali in September, 1953, as assistant superintendent at the company's Newark plant and subsequently became assistant plant manager there.

Prior to his association with Diamond Alkali Co., Mr. Trocki was plant superintendent for the National Chlorophyll and Chemical Co., Lamar, Colo. Previously, he had been connected with the Barrett Division of Allied Chemical & Dye Corp. as a production supervisor and the Radio Corporation of America as a production engineer.

HEADS EXTENSION DIRECTORS

AMES, IOWA—T. N. Nelson of Boone, Iowa, has been elected president of the Iowa County Extension Directors Assn.

Farm Conservation Practices Show Increase in 1956

WASHINGTON — Farmers over the country carried out primary agricultural conservation measures under the Agricultural Conservation program in 1955 on 1,142,000 farms and ranches, 46,000 more than the year before, according to Ezra Taft Benson, secretary of agriculture. These farms constitute 34% of the farm land in the country and are located in every agricultural county and the four territories of the U.S.

Mr. Benson stated that high on the list of conservation measures farmers established during the 1955 program year under the department's agricultural conservation cost-sharing program were 2.6 million acres of permanent and annual protective cover and 283,000 acres planted to trees and given timber stand improvement.

Among the other significant conservation work carried out on individual farms under the program are: 4 million acres of contour strip-cropping, terracing and other forms of contour farming to better manage and conserve water on sloping land; 5 billion square feet of sod waterways in farm fields to dispose of water without causing erosion; 5,111 miles of water spreading or diversion terraces to prevent erosion and conserve water; 6 million acres of stubble mulching to improve soil permeability and control wind and water erosion; 375,000 acres leveled to conserve irrigation water and prevent erosion; 493,000 acres on which farm irrigation systems were reorganized to conserve water and prevent erosion; 92,000 dams and other structures to control erosion and to provide watering facilities to permit grazing land management to protect vegetative cover.

Unwanted Weed May Be Source for Cortisone

WASHINGTON — A plant called *lecheguilla*, a bringer of disease and death to livestock in the southwest, may some day help bring relief from pain to man, according to scientists of the U.S. Department of Agriculture.

This unwanted weed is the most promising native plant yet found to yield substances that can be converted to cortisone, a drug widely used for treatment of arthritis, inflammatory eye diseases, asthma and other painful ailments.

Chemists of USDA's Agricultural Research Service have discovered in the plant a substance known as *smilgenin*, from which cortisone can be made by chemical means. Although higher yielding plant-sources of cortisone-like drugs have been found, this one is potentially important because it grows in such profusion within the nation's borders. It covers thousands of square miles in the Big Bend region of Texas. The plant is often fatal to sheep and goats.

If agave proves to be an economical source of cortisone, harvesting it may lead to recovery of land now ruined by this weed. The plant may also provide an emergency source of corage fiber—normally imported—used in making rope and cord.

DIAMOND GIFT

CLEVELAND—About 5,800 employees of Diamond Alkali Co., Cleveland, Dec. 18 received a Christmas gift of approximately \$800,000, it was announced by John A. Sargent, president. "This gift by Diamond marks the 21st consecutive year our company has made a cash Christmas gift to our employees," Mr. Sargent said. It represents 2½% of each employee's individual earnings for a one-year period.

Oregon Wheat Men Discuss Soil Bank Difficulties

PORTLAND — The Soil Bank program of the U.S. Department of Agriculture is not meeting with approval of wheat growers in Oregon and not enough acreage has been placed under the program to even consider it. That is the report Arnold Bodtger, administrative officer of the state agricultural stabilization and conservation committee, gave those in attendance at the Oregon Wheat Growers League meeting in Portland recently.

Growers said that the \$13 an acre average annual payment was not enough to attract much of the high producing acreage in the Pacific Northwest. Some growers came out flatly and said that the Soil Bank program "favored" corn producers in the middle west, and would not help farmers in this area.

"Other growers are planting barley,

and to some extent oats on their reserve acreage, which will eventually cause government controls on feed grains," said Robert L. Ball, USDA Soil Bank Division, Washington, D.C. Mr. Ball was one of the speakers on the program.

The summer-fallow "gimmick" is held mainly responsible for the 93,000 acres of wheat land that Oregon farmers have put into the acreage reserve, according to information given at the meeting.

However, a committee of the Wheat Growers League recommended that no changes be sought in the Soil Bank law in 1957, to give it a full year's trial. The committee urged a fair trial and urged participation in the conservation reserve.

Another committee report urged that a presidential commission studying industrial uses for farm products give strong consideration to disposing of excess wheat through industrial uses.

Development of the Columbia River to its full potential as a waterway for

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world-wide shipping was urged by Kenneth Fridley, president of the Oregon Wheat Growers League. "The channel at the mouth of the Columbia River must be deepened to 48 feet to allow the passage of deep draft vessels to the port of Portland," said Mr. Fridley. He called for further deepening of the channel to the Dalles and modernization of Bonneville locks to permit deep-water ships to move farther into the interior—as far as The Dalles, Ore.

NEVADA FARMLAND VALUE

RENO, NEV.—The dollar value of Nevada farmland increased by 3% during the year ending in July, 1956, says L. T. Wallace, extension economist, Max C. Fleischmann college of agriculture, University of Nevada. The Nevada farmland value increase was the same as the national increase. This is in spite of a state net farm income decreased by two thirds since 1951.

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PEACH... Brown Rot, Scab, Rhizopus Rot.

CHERRY... Leaf Spot, Brown Rot.

STRAWBERRY... Botrytis Fruit Rot.



COTTON CONFERENCE

(Continued from page 1)

of exhaustion." That this cannot be carried on with impunity was emphasized by Dr. Knipling.

In the area of chemical control, more needs to be known about insect physiology and toxicology, such as why one insect reacts differently than another to a given compound, he said.

"With the resistance problem threatening to nullify advances in chemical insect control," he went on, "the need for more information on its nature and cause becomes obvious." The use of systemics, the speaker added, may minimize the damage to insects beneficial to agriculture.

Dr. Knipling said great potentialities exist in the use of attractants—such as food and sex—in control of the boll weevil and other insects, and in the area of cultural and biological control, there are possibilities in helping nature to control insects. He suggested taking better advantage of natural obstacles such as adverse weather, efforts by the host plant to resist attack by the insect, insect parasites, predators and diseases, and food supply.

A report on results from cooperative research in pink bollworm control was made by Claude L. Welch, director of production and marketing, National Cotton Council. He declared that results have been "coming much faster than most of us expected" when the program started in 1952.

Mr. Welch pointed out that savings to the cotton industry, realized from this program, have already come to over \$2½ million annually, compared to a cumulative research expenditure of just over a million. Most of these savings have come from research findings which either eliminate or reduce the cost of equipment and processing formerly used to kill pink bollworms in cottonseed and gin trash.

The federal government, various state governments, and the entire cotton industry cooperated in an emergency buildup of the research program in what the speaker called a "classic example of what can be accomplished through cooperation."

Though the area of pink bollworm infestation has been "contained" over the last two years, the risk of a sudden buildup and further spread is always present, he said.

"We must see to it that there is no drastic curtailment in this program which has paid such dividends," Mr. Welch added. He urged full support to "the effort to obtain adequate USDA appropriations for pink bollworm research."

W. A. Ruffin, extension entomologist at Alabama Polytechnic Institute, Auburn, Ala., was leader of a symposium on "What's New in Controlling Cotton Insects," featuring three experiment station entomologists and one from the U.S. Department of Agriculture.

Dr. Dial F. Martin, entomologist, Texas A&M College, College Station, Texas, described the search currently under way for new pesticidal compounds to be used in areas where some insects have become resistant to toxicants. He said that the search includes experiments with organic phosphorus compounds, calcium arsenate, and granular insecticides.

Dr. Martin reported that several phosphorus insecticides received special attention across the cotton belt in tests against boll weevils and other pests. He stated that Guthion, used in tests in practically all states where the boll weevil is a problem, brought satisfactory results as reported by investigators.

Renewed interest was reported in

other phosphorus compounds such as methyl parathion and malathion for boll weevil control. Both have been available for several years but have had limited use.

Dr. Martin reminded that phosphorus compounds must be used with extreme caution. He urged the use of protective clothing and other safety devices in handling the materials. The appearance of resistant boll weevils in 1955 forced growers in some localities to return to calcium arsenate dust for control in 1956, Dr. Martin said, and added that there is need for an effective arsenical that can be applied in spray form.

Dr. T. F. Leigh, assistant entomologist at the University of Arkansas, spoke on cultural methods and timing for control of cotton insects. Cultural methods, such as stalk shredding and elimination of fence rows, need to be supported by well-timed insecticidal control, the speaker emphasized. Proper timing depends on factors such as the level of infestation, weather, stage of growth of the plants, and irrigation.

Dr. Leigh said that although it is desirable to reduce the number of insecticidal applications in order to cut down the rate at which insects may become resistant, at the same time, numerous and carelessly-timed applications that kill only a small portion of the insect population will greatly increase the rate at which resistance develops.

Following Dr. Leigh's talk on cultural methods of control, E. Buford Williamson, agricultural engineer at the Delta Branch Experiment Station, Stoneville, Miss., reported a stimulated interest in agricultural aircraft research, and pointed to a project now under way at the aircraft research center at Texas A&M College.

The project was designed to fill the need for a fixed-wing aircraft that would be more suitable for agricultural use. Mr. Williamson said improvements in the first experimental models have included better visibility for the pilot, specially designed flaps and ailerons to give slow flight and landing speeds, and special cockpit safety features.

The recent introduction of self-propelled high-clearance ground machines for spraying or dusting was described as a significant development in application methods. Use of the machine became widespread in the Mississippi Valley in 1956, after being generally well received by growers, he said.

Reporting particular emphasis on spraying equipment in recent years, Mr. Williamson said notable improvements have been made in the design and durability of pumps, booms, nozzles, and tanks.

One of the greatest limitations with all ground machines is failure to operate in wet fields, he reminded, then suggested that increased tire width and improved field drainage could help ease the problem to a great extent.

The topics of fertilization and weed control in cotton were also important items on the meeting agenda. Dr. Robert W. Pearson, Alabama Polytechnic Institute, Auburn, in discussing new concepts in cotton fertilization, declared that the use of nitrogen in the southeast could be increased profitably at least fourfold on the better soils, provided other management practices are improved at the same time.

He said also that the rates of phosphorus and potash could also be increased, but to a less extent, and in accordance with soil test recommendations.

"Nitrogen always has been one of the limiting factors for cotton pro-

duction in the Southeast," the speaker said. "Since it was deficient in the virgin soils and does not accumulate from fertilizer applications, it will continue to be one of the most important problems."

The cotton crop must take up about 100 lb. nitrogen an acre in order to produce the first bale of lint, and each succeeding bale requires at least 30 lb. more. Figures show that on the average only about 26 lb. nitrogen an acre are being used in the Southeast, the soil scientist said.

Improved management practices such as insect control, defoliation, and use of power machinery must accompany increased applications of nitrogen for complete efficiency, he emphasized.

The use of lime in cotton production often has been neglected, Dr. Pearson feels. "Soils acidity is undoubtedly a limiting factor for cotton production on a relatively large acreage," he said. "The severity of this condition will increase rapidly as the rates of nitrogen used go up. An aggressive liming program is the only solution to this problem."

Dr. Pearson warned that a lack of sulfur is a factor that will cause increasing trouble if the swing to high analysis fertilizers continues and if provision is not made for purposely including it in the mixtures.

Experiments strongly suggest, he said, that fertilizers for cotton in the South should contain a minimum of 8 lb. of sulfur in a soluble salt form.

More attention must also be given the proper placement of fertilizer, Dr. Pearson said.

The importance of weed control, and the promise of continuing good results with the application of chemical herbicides were phases of the subject covered by four speakers representing experiment stations, the U.S. Department of Agriculture and a farmer who described his experiences with modern weed control methods.

The latter, Harrison Evans, cotton grower of Shuqualak, Miss., told the conference that weed control methods must be flexible to be successful. The control procedures must be adaptable to varying weather conditions and to the size of the farmer's operation, he said.

Mr. Evans traced the development of weed control in cotton from the hand-labor-only era of the 1920's through the introduction of the all-purpose tractor, flame cultivation, and chemical pre-emergence and post-emergence applications.

The modern weed control program, he said, consists of portions of all these methods. Each has its own place in various stages of cotton production.

For the 1957 season, Mr. Evans said he has mapped out a seven-point grass and weed control program that includes the application of pre-emergence and post-emergence herbicides, flame cultivation, mechanical weed control methods, cross plowing and hand labor. In addition, he plans to use several of the newer herbicides on a limited acreage.

The farmer said he believes this combination of methods will give full control of weeds and grasses at a cost of \$10 an acre. He emphasized that his program for weed control will be revised as farming and weather conditions dictate.

Dr. W. C. Shaw, plant physiologist at the USDA's station at Beltsville, Md., told the conference that weeds cost the cotton farmers of the U.S. nearly \$450 million a year. He said that a well-balanced research program is urgently needed if there is to be continued progress in weed control.

Dr. Shaw pointed out that "certain inadequacies in present weed control methods are apparent and the solu-

tions to these problems will not be an easy task."

He declared that the old formula of trying to restrict weed control costs to 10% of the value of one bale of cotton and labor to 15 hr. an acre is one of the most serious obstacles to overcome. Farmers, he added, also must be persuaded to practice good weed control methods not only for cotton, but for rotational crops as well.

Fundamental research is needed in several areas of weed control, said Dr. Shaw. He listed as most important, (1) studies of the life history of major weeds infesting cotton, (2) the long term effects of herbicides on soil properties, (3) effect of application methods on herbicidal efficiency, (4) analysis of resistance of weeds to herbicides, and (5) what actually happens to the herbicide chemically when it is absorbed by the weed.

Dr. Shaw stated that immediate problems faced in our current weed control programs include the need for an effective soil fumigant to be used as a pre-planting treatment, a residual pre-emergence herbicide not affected by environment or soil factors, a post-emergence herbicide that enters the weed through the leaves, and more simple herbicide application equipment.

Dr. Shaw told the conferees, "It seems that our future rate of progress will be largely determined by: (1) the discovery of more selective, more specific, better translocated, more efficient, better formulated and more economical herbicides, (2) a basic fundamental understanding of the effects of chemicals on plant growth and soils, (3) our ingenuity in supplementing and combining chemical and cultural practices, and (4) the development of more efficient weed control techniques."

That no one set of standard weed control practices can be used by all farmers in the cotton belt was brought out by W. G. Westmoreland, weed control specialist for the North Carolina extension service. He termed the selection of a weed control program one of the most difficult choices a cotton farmer has to make, since effectiveness varies from year to year, from farm to farm and from field to field. In fact, he pointed out, under some conditions, no system of weed control is very satisfactory.

"Much information is available on various combinations of weed control practices. Successful combinations must fit the problems of the individual case and these combinations can seldom be transferred. Before establishing a rigid program, the problems of the individual situation should be considered in light of their numerous possible solutions."

Some general measures can be observed. In most cases, cultivation and hoeing provide the best weed control in cotton fields 15 acres or smaller. In fields 20 acres or larger, a combination of pre-emergence chemicals with the necessary hoeing and cultivation for a clean crop at the last working may be the best choice.

"Present experiences in the Southeastern states do not present a practical treatment for cotton 'clean of weeds' at harvest," he said.

In his portion of the discussion on weed control in cotton, Dr. J. T. Holstun, Jr., agronomist at the USDA research station at Stoneville, Miss., told the conference that there is hope of finding a single herbicide satisfactory for most weed control problems in all cotton production areas. "While such a herbicide has not yet been found, it is within the range of reasonable expectations," he said.

Until research produces this herbicide, Dr. Holstun said, combinations of various popular chemical and mechanical control measures

All-Out Research on Factors Of Insect Resistance Urged at Cotton Production Meeting

BIRMINGHAM, ALA.—A plea for all-out research on the part of everyone concerned to counteract the factor of insect resistance to pesticides was made by Dr. L. D. Newsom, head of the department of entomology at Louisiana State University, Baton Rouge, at the Beltwide Cotton Production Conference here Dec. 14.

The scientist said that basic research projects must be undertaken immediately to answer questions such as how insecticide applications and combinations affect this resistance. Studies also must be made, he said, to determine how insecticides actually kill pests, if we are to develop chemical compounds that will control or delay resistance.

Insects have demonstrated varying degrees of resistance in a number of cotton-growing states during the 1956 season, he said. States in which these conditions were found are Alabama, Arkansas, California, Louisiana, Mississippi, South Carolina and Texas, Dr. Newsom reported.

(Editor's note: Industry spokesmen have pointed out that although insects have shown resistance to certain pesticides in these states, the situation is not necessarily extant in all portions of these areas.)

Dr. Newsom recalled the history of insect resistance, pointing out that this condition has been known since the summer of 1951 when chlorinated hydrocarbons apparently failed to control the leafworm in Venezuela, he reported. By 1953, it became apparent that the leafworm had developed resistance in this country.

By 1954, cotton entomologists were beginning to show concern about the possibility of resistance developing in cotton insect pests. In 1954 and 1955 growers in parts of Louisiana began expressing belief that the boll weevil was becoming resistant to chlorinated hydrocarbons.

"With the present trend toward use of increasingly effective insecticides on a larger portion of the cotton acreage, it seems probable that resistance to chemicals in cotton pests will continue to be a problem," Dr. Newsom stated. "Certainly it is one of the most important problems facing entomologists in the South today."

The application of calcium arsenate and methyl parathion in areas of resistance proved effective in many cases, he said, but safety hazards associated with the use of the alternate insecticides prevented their use from being completely satisfactory.

"Although it has been demonstrated that resistance can be coped with on a short-range basis, long-range problems may be much more difficult," Dr. Newsom commented. "Switching from one insecticide to another is likely to provide nothing more than temporary relief."

Unless the basic research programs are started at once, he said, Mid-South cotton growers might be faced with the prospect of applying a different insecticide for each cotton insect pest.

He warned that it may be necessary for the grower and the insecticide industry to accept drastic changes in recommendations, often on short notice. And it may mean changing from a highly efficient to a less efficient insecticide, from a cheap material to a more expensive one, or from a relatively safe to a more hazardous insecticide.

"There can be no excuse in the future for being caught as unprepared for the development of resistance in a pest as was the case with the boll weevil," said Dr. Newsom. "With a program based on sound research and aggressive extension work, resistance

to chemicals in cotton pests is another problem which can be solved satisfactorily."

Conference Report Discusses Insect Resistance Problem

BIRMINGHAM, ALA.—Preliminary excerpts taken from the conference report on cotton insect research and control were distributed by the National Cotton Council of America. Among these were brief discussions on resistance of insects to pesticidal chemicals, and the effect of environmental factors on insect control.

The excerpt had the following to say about resistance to insecticides:

"Resistance to insecticides is the ability in insect strains to withstand exposure to an insecticide which exceeds that of a normal susceptible population, such ability being inherited by subsequent generations of the strain.

"Resistance in cotton pests was first demonstrated in the cotton leafworm in 1953. This was followed by development of resistance to one or more recommended insecticides in the salt-marsh caterpillar, cabbage looper, boll weevil, onion thrips, and some species of spider mites. Resistance is suspected, although not yet definitely proved, in the cotton aphid, beet armyworm, southern garden leafhopper, cotton leaf perforator, and lygus bugs.

"The importance of resistance in cotton insect control was not fully appreciated until 1955, when the boll weevil was proved to have developed resistance to the chlorinated hydrocarbon insecticides in some areas of Louisiana. Areas in the State in which resistance was found to be a problem in 1956 included over half of the total acreage planted to cotton.

"It was suspected that the boll weevil had become resistant in a large area of the South Delta of Mississippi and a small area in Southeast Arkansas during 1955. This was confirmed in 1956 and the areas involved were extended. In 1956 resistance developed in one small locality in South Carolina and one in Texas.

"In areas where resistance in the boll weevil has been demonstrated, insecticides having different physiological modes of action than the chlorinated hydrocarbons should be recommended. Because of safety factors and other advantages of the chlorinated hydrocarbons, growers are urged to continue the use of these insecticides for boll weevil control un-

less resistance is causing failure to achieve satisfactory control.

"Although resistance of cotton pests to recommended insecticides is a serious problem, it is still restricted to a very small portion of the total cotton growing area. However, the problem emphasizes the importance of utilizing cultural control, especially early stalk destruction, as much as possible in reducing populations of the boll weevil, the pink bollworm, and other insects where such methods are applicable. Every advantage possible should be taken of biological control agents, and when there is a choice, chemicals that are of minimum detriment to beneficial insects should be chosen."

Continuing, the report covered the effect of environmental factors on insect control as follows:

"Failures to control insects have often been attributed to ineffective insecticides, poor formulations, and poor applications. Recently, resistance has been blamed for failures in local areas. Extremes of humidity, rainfall, temperature, sunlight, and wind have been shown to reduce the toxicity of an insecticide applied to plants. These factors also affect the development of insect populations, being favorable to certain species and detrimental to others. The rate and total growth of the plant are also affected by these factors, particularly if the same conditions last for several days or weeks.

"A combination of an adverse effect on the toxicity of the insecticide plus a favorable effect on growth of the plant and insect population may result in failure to obtain control. Conversely, conditions favorable to the insecticide and plants and adverse to the insect population will result in very effective control. Also, many insects, particularly the boll weevil, become more difficult to kill as the season progresses. Therefore, one should consider all factors before arriving at a decision as to the specific factors responsible for the failure to obtain control."

Expanded Research

STILLWATER, OKLA.—An expanded program in soil and water research has been announced by Oklahoma A&M College agriculture officials. The program, which gets under way immediately, will tackle such problems as irrigation, moisture conservation in cultivated crops, how to reduce evaporation losses, fertility relationships under drouth conditions, water insoak, drouth probability studies and others.

ALABAMA TONNAGE

MONTGOMERY, ALA.—Alabama fertilizer sales in October totaled 54,920 tons, compared with 51,704 tons in October, 1955, according to the Alabama Department of Agriculture and Industries.

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Latest in Herbicide Research Reported at North Central Weed Control Conference

CHICAGO—A four-day conference which attracted nearly 700 persons from a broad geographical area and brought out reports of many phases of herbicidal action, research, manufacturing problems and reports on 1956 experiments, was held by the North Central Weed Control Conference at the Sherman Hotel, Chicago, Dec. 9-12. This group, which comprises the entire midwestern area of the U.S., featured speakers from the U.S. Department of Agriculture, the Food & Drug Administration, the manufacturing industry, and college and experiment station personnel from the states of the area.

Dr. M. W. Parker, assistant director of crops research, Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C., told the assembled weed control men that they, as weed scientists, hold in their minds and hands a "great potential for rapid and permanent agricultural advancement." He told the conference that "you can guarantee the greatest gains by continuing to view your science in broad and fundamental terms."

Dr. Parker said that weed research continues to be a part of the field crops research branch of the Department of Agriculture. This research, he said, is divided into four main categories, which deal with weeds affecting field and horticultural crops; aquatic and other non-crop weeds, pasture and range weeds, and herbicidal evaluation, physiology and ecology.

The weed section now has 45 scientists on the job, Dr. Parker said, and more personnel is expected to be added soon to the staff. He explained that all of the section's research is cooperative with state agricultural experiment stations or with industry. "The section is currently cooperating with 24 states and with about 40 manufacturers of herbicidal chemicals," he reported.

The USDA expert told the conference that more and more needs to be learned about the mode of action of various chemical herbicides in relation to their structures. "The most effective use of these chemicals will come with fundamental knowledge of how they penetrate into plants, and what their movement and action is within the plant that affects the kill. The weed science needs a great deal more information concerning selectivity. Exactly why is one weed sensitive and another tolerant to a particular chemical?" he asked.

The subject of weed control from an industry viewpoint was discussed by Dr. Max T. Goebel, director of research, Grasselli Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Dr. Goebel told the conference that although chemicals have no monopoly on weed control, this method has come of age not only as a research development but as a practical agricultural and industrial practice. "The chemical industry must take stock to determine the business risks involved as the science of feed control continues to grow. Also, much thought must be given to the proper interrelationship of effort between industrial weed control research men and those employed by governmental agencies," he said.

"Weed control is an extremely difficult and expensive line of research," he continued, and added that the cost to his company of discovering and developing the urea herbicides now lies between three and four million dollars. "Well over half this sum was spent in demonstrating the effectiveness of the

materials and in proving that they could do the job safely," the executive declared.

That the chemical industry must take for granted the fact that one of the largest single cost items in the development of chemicals for agriculture is the research necessary to assure that these chemicals can be marketed without introducing a hazard to health, was emphasized by Dr. Goebel. The industrial research man must know the properties of his experimental product thoroughly, especially its toxicological aspects, both acute and chronic. "It is much better to be able to demonstrate that an agricultural chemical will not appear in or on the treated crop in significant amounts, rather than to argue about the degree of toxicity of large residues," the speaker declared.

Sessions were held on the control of weeds in field crops, horticultural crops, irrigation ditches, herbaceous weeds and control of brush and woody plants. Mechanical considerations and aerial applications were also taken into account as were basic studies in botany, ecology and plant physiology.

Prominent among literally scores of herbaceous weeds referred to in the technical papers presented at the conference, were wild buckwheat, foxtail, green foxtail, crabgrass, Johnson grass, quack grass, lambsquarters, purslane, stinkweed, and Russian thistle.

The subject of weed control in field crops was well covered by technical papers reporting on experiments in controlling unwanted vegetation in alfalfa, barley, corn, clover, flax, various grasses, peas, soybeans, and wheat.

Pretilage treatment with ATA and 2,4-D for Canada thistle control in flax, soybeans and corn was reported

NORTH CENTRAL OFFICERS

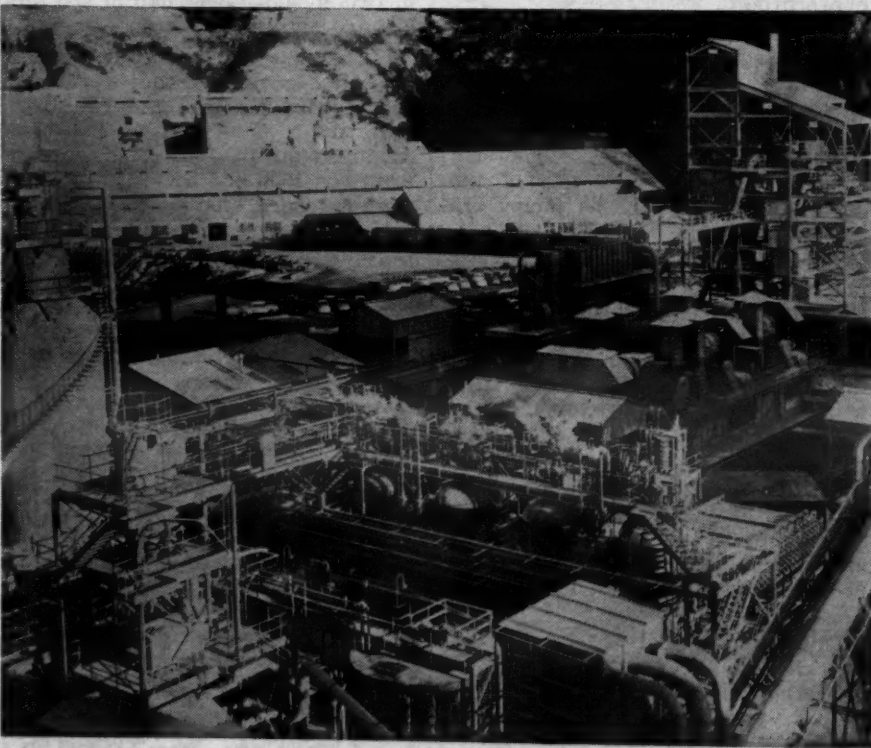
CHICAGO, ILL. — Officers elected at the 13th annual North Central Weed Control Conference held at the Sherman Hotel here Dec. 9-12, are as follows: Fred W. Slife, department of agronomy, University of Illinois, Urbana, president; L. A. Derscheld, department of agronomy, South Dakota State College, Brookings, S.D., vice president; and Dwight W. Lambert, state department of agriculture, Lincoln, Neb., secretary-treasurer. Mr. Lambert was reelected to his office. The new president succeeds Earl A. Helgeson, department of botany, North Dakota Agricultural College, Fargo, and Mr. Derscheld succeeds Mr. Slife as vice president.

In a paper by three University of Minnesota experimenters, K. L. Blanchard, L. S. Jordan and E. H. Jensen. They said that results from six widely distributed locations in Minnesota with these chemicals brought satisfactory control in only one spot. They concluded that further evaluation of these treatments will be taken on the basis of regrowth in the last spring stand of 1957.

The use of amino triazole on Canada thistle was reported by D. D. Bondarenko and C. J. Willard, Ohio State University. By Oct. 10, following a season's treatment with the herbicide, the authors reported that regardless of the rate of tillage or tillage methods used, the kill of Canada thistle was satisfactory, being from 98 to 100%.

Crops on which the tests were made included grain sorghum, sweet-corn, soybeans, and alfalfa. None of these crops showed any damage from application at any of the rates of application which went as high as 12 lb. an acre, the paper said.

The meeting terminated with a luncheon session, with E. A. Helgeson as chairman, and an address by A. G. Norman, professor of botany and director of the University of Michigan botanical gardens. His subject was, "The Current Unbalance in Herbicide Research."



JOHNS-MANVILLE PLANT—Shown above is the new Johns-Manville synthetic silicates plant at Lompoc, Cal. The plant is now in full production making an initial line of four synthetic calcium silicates marketed under the name, Micro Cel. These serve as absorbents and anti-caking agents for insecticides, cleansers and detergents, fertilizers and certain food and feed products. Additional calcium silicates are under development and Johns-Manville also is working on magnesium and other metallic silicates. The heart of the plant is the group of four reactors within a maze of pipes (middle foreground) where slurries of lime and diatomaceous silica are combined chemically to make a calcium silicate. This slurry is fed into two vacuum drum filters (behind reactors under roofed housing) which change the slurry to a cake. Then the cake becomes powder as it goes through two long conveyor driers (identified by square cupola vents) and a flash dryer (not visible). Finally, the Micro Cel powder is pneumatically sent upward to the "dry end" tower (upper right). This tower contains a collector, milling equipment and storage bins. At the tower base is a packaging room where the Micro Cel is put in bags for shipment. The plant is largely automatic in operation and its present capacity is upwards of 1,000 carloads a year.



B. R. Judkins

Velsicol Adds New Sales Representative

CHICAGO—Billy R. Judkins, Little Rock, Ark., has been added to the agricultural chemicals sales staff of the Velsicol Chemical Corp., according to an announcement by Velsicol. Mr. Judkins will assist Velsicol's area manager, Larry Bewick, in Mississippi, Louisiana, Arkansas and Tennessee.

A native of Atkins, Ark., Mr. Judkins was graduated from the University of Arkansas in 1956 with a science degree in agriculture. Prior to that he had attended Arkansas Tech and served four years in the U.S. Air Force. Mr. Judkins will maintain headquarters at 4103 "B" St., Little Rock, Ark. Mr. Bewick, area manager, is located at Monroe, La.

Velsicol Corp. produces technical chlordane, heptachlor and endrin at manufacturing units located at Memphis, Tenn., and Marshall, Ill.

Illinois Pathologist Takes Forward Look at Plant Disease Control

URBANA, ILL.—In 25 years systemic chemicals will largely supplant our present-day fungicides in fighting plant diseases, predicts M. B. Linn, acting head of the department of plant pathology at the University of Illinois College of Agriculture.

Speaking recently before the annual convention of the Vegetable Growers of America, Mr. Linn also made these statements:

It may be possible in the future to protect seed against soil rot and seedlings against damping-off by treating the seed with a quickly penetrating systemic chemical.

Diseases affecting the leaves and stems may be controlled by spraying plants once with a systemic in the seedbed and perhaps a second time after they have been transplanted in the field.

Certain diseases, such as stem canker, which affect beans after they are planted in the field, may be controlled by dripping chemicals into the furrow at the time of planting.

For applying pesticides on plants, Mr. Linn expects that large vegetable farms will use airplanes to a greater extent. Smaller farms will use air-blast concentrate sprayers. With the development of systemics that will dissolve in water, it may be possible to put these compounds into irrigation systems, Mr. Linn said.

Donald L. LeCureux In New AACCO Post

NEW YORK—Donald L. LeCureux has been named assistant manager of the American Agricultural Chemical Co.'s Saginaw, Mich., sales office. Formerly, he was a salesman for the Saginaw office.

Industry Patents and Trademarks

2,773,736. Treatment of Phosphate Rock to Recover Phosphorus, Fluorine, Calcium, and Uranium. Patent issued Dec. 11, 1956, to Clinton A. Hollingsworth, Lakeland, Fla., assignor to Smith-Douglass Co., Inc., Norfolk, Va. The method of recovering values from a natural phosphatic material containing recoverable amounts of phosphorus, fluorine and calcium which comprises preparing an intimate mixture consisting essentially of said material and at least 10% by weight of a carbonaceous material, subjecting said mixture to heat-treatment for a period not exceeding 90 minutes at a temperature within the range of 2000 to about 2400° F. in a chlorine-containing atmosphere selected from the class consisting of hydrogen chloride and ammonium chloride in which chlorine is present in excess of the amount theoretically required to convert all of the calcium in the phosphatic material to calcium chloride, and subjecting the gaseous reaction product of the heat-treatment to selective condensation in which at least two condensates are obtained respectively consisting for the most part of the phosphorus and fluorine contents of said gaseous reaction product, the non-volatile residue of said heat-treatment containing most of the calcium originally present in the phosphatic material in the form of molten calcium chloride.

2. The method of claim 1 in which the molten calcium chloride is separated from the unfused solid matter of the non-volatile residue of the heat-treatment.

3. The method of claim 2 in which the natural phosphatic material additionally contains a recoverable amount of uranium, and recovering such uranium with the calcium chloride separated from the non-volatile residue of the heat-treatment.

2,773,743. Recovery of Sulfuric Acid and Iron Oxide from Iron Sulfate. Patent issued Dec. 11, 1956, to Walter Fackert, Neuwied, Germany. A process for the recovery of sulfuric acid and iron oxide from ferrous sulfate, which comprises passing steam through the ferrous sulfate at a temperature above 600° C. but not substantially in excess of about 800° C. in the absence of air and in the presence of an oxidizing agent selected from the group consisting of nitric acid, barium peroxide and potassium chlorate.

2,773,758. Herbicidal Compositions. Patent issued Dec. 11, 1956, to Arthur H. Schlesinger, Dayton, Ohio, assignor to Monsanto Chemical Co., St. Louis, Mo. A herbicidal composition comprising an oil-in-water emulsion of a phytotoxic quantity of a chloro-substituted 3-acetylphenyl.

2,773,796. Method of Protecting Plants from Fungi by Applying Hydrazine Salts of Inorganic Phosphorus Acids. Patent issued Dec. 11, 1956, to Johannes Thomas Hackmann and Gerarda Francisca Elisa Maria Dierick, Amsterdam, Netherlands, assignors to Shell Development Co., Emeryville, Cal. A method for protecting plants from destruction by fungi which comprises applying to the plants the hydrazine salt of an inorganic phosphorus acid selected from the group consisting of phosphoric acid, phosphorous acid, hypo-

phosphoric acid, and pyrophosphoric acid in an amount toxic to said fungi, said hydrazine salt having a mole ratio of acid to hydrazine from 0.5:1 to 2:1 and being essentially free of metal constituents.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

Pine King, in capital letters, for aerosol insecticide, aerosol deodorant. Filed Nov. 12, 1954, by Connecticut Chemical Research Corp., Bridgeport, Conn. First use June, 1948.

Paradize, in capital letters, for insecticides and mothicides—namely,

crystals for killing and preventing moths and compositions for killing larvae and eggs consisting of paradichlorobenzene. Filed Oct. 24, 1955, by Paradize Chemical Co., Inc., New York. First use January, 1949.

Naconite, in capital letters, for fertilizers. Filed July 23, 1956, by W. R. Grace & Co., New York. First use June 1, 1956.

Nitra-Mix, in caps and lower case, for liquid fertilizer solutions of soil nutrients and conditioners including nitrogen, phosphates and potash. Filed July 30, 1956, by Plantation Fertilizers Corp., Houma, La. First use, Aug. 1, 1953.

SOIL GROUP TO MEET

TORONTO—The Ontario Soil and Crop Improvement Assn. will hold its annual convention at the Coliseum in Toronto Jan. 30-Feb. 1. Among the speakers will be N. R. Richards, head of the Ontario Agricultural College soils department, who will discuss the efficient use of fertilizer and its influence on farm income.

Farm Price Drop in Next Decade Predicted

GRAND RAPIDS, MICH.—Food grains, feed crops, fats and oils and livestock will be hit hardest in the next decade by price declines. That prediction was made at the annual meeting of the Vegetable Growers Association of America at Grand Rapids by Arthur Mauch, farm economist of Michigan State University. Fruits, dairy products and vegetables will fare relatively better.

Mr. Mauch said that farm surpluses in the next decade will continue to be problems in spite of attempts to limit production. He said economic projections indicate that farmers in 1965 will still be producing about 6% too much per year to expect reasonably acceptable prices in the market place.

Mr. Mauch said agriculture faces four possible ways out of its problem: Expand demand, control production, adjust production within agriculture or shift excess producers out of the field of agriculture.

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South Carolina Sales

CLEMSON, S.C.—Fertilizer sales in South Carolina during November totaled 24,993 tons, compared with 26,346 tons in November, 1955, according to the State Department of Fertilizer Inspection and Analysis. Sales for the first five months of this fiscal year (July-November) totaled 99,713, up 4% over 95,688 tons in a corresponding period a year ago.

Proper Fertilization, Use of Other Good Farming Practices Stressed at Maryland Meetings

COLLEGE PARK, MD.—Five regional fertilizer conferences were held in early December by the University of Maryland Extension Service. The conferences were designed primarily for fertilizer dealers and salesmen but were open to vo-ag teachers, soil conservationists, county agents and other agricultural leaders.

C. P. Ellington, extension agronomist outlined eight points in his talk, "It Takes More Than Fertilizer." In brief the points were:

1. Use the crop that is best suited for your soil conditions, labor requirements and other needs.
2. Use good seed of the best adapted varieties. Certified seed is probably your best bet.
3. Seed at the right time.
4. Use a system of crop rotation that maintains soil structure and organic matter and one which helps in the control of weeds and diseases.
5. Use insect control measures.
6. Have sufficient plant populations to utilize the fertilizer.
7. Manage your crop to get the best use from it. In other words, if it's a pasture, don't over or under graze.
8. Consider the amount, rate, method and time of applying fertilizer before applying it.

Farmers can use the best fertilizer in the world, the agronomist said, but they won't get the most out of it unless they consider all of the above.

A panel composed of two county agents, two fertilizer representatives and Mr. Ellington, discussed ways of getting farmers to follow more closely the university's fertilizer recommendations. The university distributes a publication each year in which fertilizer recommendations are made for various crops throughout the state. Fertilizer is a valuable tool in crop production if properly used, Mr. Ellington said, and misuse of fertilizer can result in reduced yields and crop damage.

Dr. O. E. Street who heads up the tobacco research work at Maryland discussed recommended amounts of fertilizer for tobacco. He said 1,500 lb. to the acre is just about the maximum amount recommended in the state and less than 1,000 lb. should never be used. Tobacco growing in Maryland is confined mostly to five southern counties.

Dr. Street described the 1,500 lb. as the point of diminishing returns. Beyond this, he said, the farmer is wasting fertilizer. Below 1,000 lb. he is wasting time. A rule of thumb which works pretty well in Maryland is to use one pound of fertilizer for each five tobacco plants, he said.

Soil tests are very important too, Dr. Street said, because they tell the farmer how much fertilizer he should use. Since soil tests are free to residents of the state, farmers cannot afford to pass them up, Dr. Street concluded.

Another university tobacco specialist, Dr. John Hoyert, told the fertilizer dealers and salesmen about the "Value of Cover Crops."

Cover crops add organic matter to the soil, he said, and an acre of good cover adds as much organic matter to the soil as would 10 tons of manure. If this same acre of cover were analyzed it would be found to be worth half-a-ton ordinary fertilizer in dollar and cents values, he said.

Dr. Hoyert also reported that a cover of grasses or small grains mixed with a legume is of higher quality than the grass or grain used alone and gives a higher dollar return on the following cash crop. The quality of cover crops is directly related to its nitrogen content.

Dr. Frank Bentz, head of the university's soil testing facilities talked

on "Making Fertilizer Recommendations in 1957-58." In his talk he covered general fertilizer recommendations for Maryland farm crops and fertilizer grades and ratios.

"Balance Fertilizer Applications Against Plant Nutrient Removals," was also discussed by Dr. Bentz. Although crops, manure and the soil itself all return certain amounts of nutrients to the soil, farmers must maintain a high soil fertility level by the addition of commercial fertilizers, he said.

Dr. Bentz demonstrated soil testing and showed how soil tests are related to crop yields. He also showed the group how a soil test is used in making fertilizer and liming recommendations. Along with this he listed various kinds of lime and told how lime reacts in the soil to help fertilizer do its job. He also covered when and how to apply lime.

Dr. A. A. Duncan, horticulturist for the University's Extension Service gave fertilizer recommendations for peas, sweet corn, tomatoes, sweet potatoes, snap beans and cantaloupes.

Dr. Duncan re-emphasized the importance of soil tests in growing all these vegetables. He also said a good disease and insect control program should be followed along with a well rounded fertilizer program.

Peas, sweet corn, snap beans and sweet potatoes all need extra nitrogen during the growing season, and cantaloupes need plenty of magnesium, potassium and boron to produce a high quality crop, Dr. Duncan said.

The important thing to remember in growing tomatoes, the horticulturist said, is to keep the plants from getting lush and green early in the season. Then when the plants get into the fruiting season, "pour on the coals to bring out everything the plants have."

Maryland farmers seem to do a good job of fertilizing snap beans but troubles with this crop are hard to pinpoint. It could be the variety, weather conditions, seeding or many other factors.

"We believe that with the exception of tobacco, increased fertilizer usage on the acres not in the soil bank will offset much of the loss on those acres removed from the allotment crops," Dr. M. S. Williams, chief agricultural economist for the National Plant Food Institute, told the group.

He said history has shown that when cultivated land is taken out of production under a control program, farmers tend to use more fertilizer on the remaining acres.

An estimated 150,000 tons of fertilizer could be lost throughout the country because of wheat reduction alone. Another 100,000 tons could be lost because of corn acreage reductions. In view of this Dr. Williams challenged the dealers "to encourage farmers to use more fertilizer on the remaining acres in order to cut unit costs. Let's sell the farmer on establishing a properly fertilized cover on these acres," he said.

In his talk, the economist also explained in brief, the fundamentals of the soil bank, and he explained how the acreage reserve and conservation reserve operate.

Dr. Williams listed five things that members of the fertilizer industry can do to help.

1. Keep in close touch with state and county Agricultural Stabilization and Conservation Committees, for these are the people who determine the operation of the program in the state and county.
2. Protect idle acres from wind and water erosion by "insisting that ASC

committees encourage farmers to establish cover on these acres."

3. Sell farmers on the idea of increasing profits by reducing production costs through the use of more fertilizer on those acres not pledged to the soil bank.

4. Have salesmen learn as much about the program as possible.

5. Work closely with all local agricultural workers, that is, soil conservation personnel, county agents, vo-ag teachers and others to see that no opportunity is lost to get fertilizer properly used.

Oklahoma A&M Gets Spencer Grant For Nitrogen Study

STILLWATER, OKLA. — A grant of \$10,000 has been received by the Oklahoma A&M College experiment station from the Spencer Chemical Co., Kansas City, to support a five-year research project to determine effective rates and methods of nitrogen fertilization for improved pastures and forage production. Dr. L. E. Hawkins, experiment station director, outlined provisions of the research work.

Each year, for the next five years, \$2,000 will be available for the study. Dr. J. Q. Lynd, associate professor of agronomy, will supervise the study, and he will be assisted by graduate students from Oklahoma A&M College.

"There is no question but that Bermuda grass is the best grass for improved warm season pastures in eastern Oklahoma," Dr. Lynd states. "The problems of amounts, time and method of nitrogen fertilizer application are of first importance for establishing and maintaining improved Bermuda grass pastures. It is difficult to successfully establish Midland and Coastal Bermuda grass on low fertility soils. Adequate fertilization, especially with nitrogen, is a 'must' for the successful establishment and maintenance of these improved Bermuda strains," Dr. Lynd says.

Greenhouse, field plot and laboratory experiments will be used, in addition to actual grazing experiments. Soil fertility studies for obtaining success with seeded Bermuda grass will also be studied. The experimental pasture work will be done mainly on a newly established 40-acre Bermuda grass area on the Southeast Oklahoma pasture fertility station at Coalgate.

New Agricultural Aircraft Company Formed in California

SAN FRANCISCO — Crop Care, Inc., has been authorized to offer for sale 150,000 shares of common stock at \$2 per share to become the first agricultural aircraft stock company in California, according to Charles H. Branstetter, Jr., president of the new corporation. Mr. Branstetter formed the new corporation from Branstetter Flying Service, an established crop dusting firm in Sacramento.

Crop Care expects to operate over 30 planes during the coming summer throughout northern and central California and in other western states where a demand for dusting, spraying, fertilizing and seeding exists. Forest spraying will be one of the chief operations of the new company.

Mr. Branstetter, who is vice president of the National Aviation Trades Assn., said that last year farmers spent an estimated \$25,000,000 in California for aerial crop application and at least another \$40,000,000 for the chemicals used.

BACTERIAL SPOT

ELKTON, MD.—Raymond Mueller, Cecil County, Md. agent, reports that bacterial spot of peach was serious during 1956 as both a fruit spot and a leaf spot.

Pacific Northwest Group to Promote Soil Sampling

PORTLAND, ORE. — Directors of the Pacific Northwest Plant Food Assn. met in Seattle Dec. 10 and laid plans for operation this coming year. They approved a project submitted by the Soil Improvement Committee for a soil testing program to be carried on in the state of Washington, and allocated \$1,000 for the carrying out of the program.

The plan is to pay one dollar to the fertilizer dealer for collecting a soil sample from a local farmer, sending the sample to the soil testing service for analysis of NPK, Ca, pH and following through on the recommendation. The service fee payments would be limited to 1,000 samples on an allocated basis in the following five counties of Washington: Skagit, King, Clark, Kittitas and Grant. The committee felt this service was most needed in these counties.

The samples would be limited to forage, field and grain crops where it is felt that phosphate, potash, calcium, and pH analyses offer the greatest opportunity for increased use of fertilizer and where it is now felt there is a serious lack of economic fertilizer application.

The farmer would pay for his own soil analysis; the soil testing laboratory fee is \$1. It is felt that this would insure greater farmer interest than if it were free; also it sets the pattern for additional analyses that can be submitted through the same channels. A practical limit must be imposed of one or at the most two samples per farmer.

All of the dealers interested in this project would, to be eligible for the \$1 service fee, have to attend a meeting with the county agent, at which time the dealers would be instructed how to take an adequate soil sample and would be further acquainted with the association's purpose and the program.

The program would be instituted after July 31 to promote the fall use of the testing service and increase the fall application of the fertilizers recommended.

The Soil Improvement committee hopes the following will result from the program:

1. It would correct abuses in soil testing working to the detriment of the farmer, the fertilizer industry and the Washington State Soil Testing Service.
2. The program would give impetus to the State College of Washington Soil Testing Program, especially in the fall when there would be an expected lag.
3. It would aid the farmer in obtaining economical crop increase.
4. It would acquaint the local fertilizer dealers with soil testing programs and would assist dealers in selling the proper amount of fertilizer to the farmer.
5. The average of 200 tests in each county would be invaluable to members of the fertilizer industry.
6. It would constructively promote the use of fall fertilizers.
7. This program would be completed and its effect felt promptly and in succeeding years.
8. It would give a public service to the colleges; it would demand the county agent's interest in fertilizers, would acquaint him with the association and the industry's program and would give impetus to the dealer to sell fertilizer.
9. The program would have local news appeal.

The program, under the guidance of Grant Braun, chairman of the Soil Improvement Committee, of the Pacific Northwest Assn., was submitted to the board by one of its members, Frank Taylor.

Better Selling

A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

FARMERS GET TRIAL ORDERS

Merchandising Wrinkle Pays Off for Pennsylvania Dealer

By PHIL LANCE
Croplife Special Writer

A neat merchandising wrinkle has been used by the Shiele Feed Mill, Doylestown, Pa., in stimulating the sale of its line of fertilizers that has been paying off in increased sales.

"Talking up a fertilizer is a good sales point, but for a busy feed dealer, it's almost an impossibility," explains John B. Shiele, owner. "It seems that we just don't have enough time to play up fertilizers when we visit our customers, and we don't have the time to spend just canvassing for this business. Yet we know that the demand for fertilizer is around and all we have to do is convert it into actual sales.

"From past experience, we have learned that in order to sell a product, you must bring it to the attention of the customer, play it up and make repeat visits. It takes time before the customer decides to buy, but when he does, it means repeat business.

"So the issue is a good one, providing you have the time to do the necessary following up. We don't because we are a fairly small operation and must make the most of our available personnel and time. So we drummed up a promotional idea that has been paying off since."

Right before the season approaches when fertilizer is to be used, Mr. Shiele finds out what crops all his feed customers are going to raise. He feels that if he can just sell fertilizer to all of his regular feed customers, that he will have as much business as he can handle. And as he already has contact with these customers, he finds it an easy avenue to sales.

"We have hundreds of feed customers and almost to the man, they all raise something in addition to their livestock and poultry," explains Mr. Shiele. "So when we make our regular visits to them to pick up their feed orders, we ask them the crops that they are going to raise the coming season. We make a note of it and this forms the basis for our fertilizer promotion."

At the appropriate time, the driver leaving a feed order at the farm house also drops off a small order of fertilizer for a particular crop. The customer also is handed a note from the Shiele Feed Mill. This note tells the customer that the fertilizer is being left for his approval and use on his crops. If the customer uses it and finds that it doesn't do what it is advertised to do, he owes the mill nothing.

"Once the fertilizer is on hand, the farmer will use it," says Mr. Shiele. "He will even phone us or tell the driver on his next delivery to bring an extra quantity to handle his entire needs. On the other hand, if he doesn't intend to use the fertilizer for any particular reason, he just tells the driver to take it back. That's all there is to it."

Shortly after the driver has made his delivery, the customer is contacted by phone and told that the particular fertilizer was left off by the driver because it is most suitable for the crop that the farmer is raising. Customers raising two or three crops are told that they can have small orders of fertilizer for their other crops in addition to the one already delivered if they so desire. Usually, additional orders are written up over the phone.

"Getting the fertilizer into the farmer's hands is the most important point," explains Mr. Shiele. "Once he has your fertilizer, regardless of the quantity, you automatically knock out competition. Receiving the fertilizer with no money to be paid if he doesn't find it does what is advertised, just about sells it to the farmer. The rest is easy. Either the farmer orders more or he sends back the quantity if he can't use it."

This dealer only handles a single brand of fertilizer. He feels that a single brand gives him better control of his product and that he gets better cooperation from his source of supply because of it.

"The major crops in our area are wheat, soybeans, oats, corn and barley," Mr. Shiele explains, "and the brand of fertilizer that we handle has a mixture for all. Our best sellers are 5-10-5, 3-12-6 and 5-10-10. As it is, we have had to rent an additional warehouse to store the quantities of fertilizer that we sell and if we handled added brands, I think our sales would be the same but that our overhead would be greater."

Mr. Shiele raises these crops on his own farm that is located in Bucks County and he uses this fertilizer on them. Actually, his crops are more for "show" than for business and he is always asking his customers and prospects to drop around and see how his crops are flourishing.

"When farmers see that the dealer who is selling a certain brand of fertilizer is using it on his own fields, they get to feel more strongly about that particular brand of fertilizer," explains Mr. Shiele. "They will also drive past the farm and look the crops over and without question, a well maintained crop will stand out. This helps to influence the farmer on

(Continued on page 11)



SHOP TALK

OVER THE COUNTER

FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

Poor selling looks much the same and is pretty sad wherever you find it—door-to-door, in weak-kneed advertising or in a retail store, says George Hill, Oklahoma A&M College business administration staff member.

Mr. Hill cites the example of an appliance advertisement portraying two parents with their two small sons, Billie and Clarence. Billie is saying to Clarence: "Just think, and that piece of junk (eyeing the advertiser's refrigerator) is going to set Dad back two whole months' pay." Just what was that advertiser trying to prove, Mr. Hill asks. This example is somewhat comparable, Mr. Hill says, to the situation where a farmer comes into the farm supply store and is greeted with a half-hearted, "Want something?"

Delaware Corn King Gets 174.5 Bu. Yield

DOVER, DEL.—Posting the highest measured corn yield ever recorded in the state, Marshall Lee Wootten of Millsboro was named Delaware corn king recently at the annual banquet of the Delaware Crop Improvement Assn. His record-breaking yield in the 1956 5-acre corn yield contest was 174.5 bu. per acre.

Crowned soybean king at the banquet was L. M. Reichert of Townsend, who grew an average of 50.8 bu. of beans per acre in the 1956 5-acre soybean yield contest.

Mr. Wootten's yield in the corn contest was obtained using the DeKalb 801 variety, planted April 27, and with a population of 13,386 plants per acre. His average ear weight, corrected to 15.5% moisture, was 14.7 ounces per ear. The crop before corn was corn with a ryegrass cover. He applied 500 lb. of a 5-10-10 fertilizer, plowed down, plus 3 to 4 loads of manure per acre. 2,4-D was used to kill weeds.

CORN CHAMPION

NEW BRUNSWICK, N.J. — New Jersey's corn growing champion this year is E. Gilbert Taylor of Chester, who grew 151.5 bu. an acre. The outcome of the 1956 100-bu. Corn Club was announced by Dr. John L. Gerwig, extension crops specialist at Rutgers University.

(Continued on page 12)

CHALLENGE TO TODAY'S DEALERS

Advantages of On-the-Farm Merchandising

EDITOR'S NOTE: The author of this article contends that the long-term success of the farm retailer will be to a considerable degree contingent upon developing a strong outside selling program. The advantages of such a program were outlined by Robert Waite, Jr., Dannen Mills, Inc., in a talk at the convention of the Grain & Feed Dealers National Assn. in Chicago.

As a firm believer in on-the-farm merchandising, and the many advantages accruing to the dealers who are doing it, I have some suggestions for a program that will help retain the retailer's position in the over-all

plan for the distribution of farm supplies.

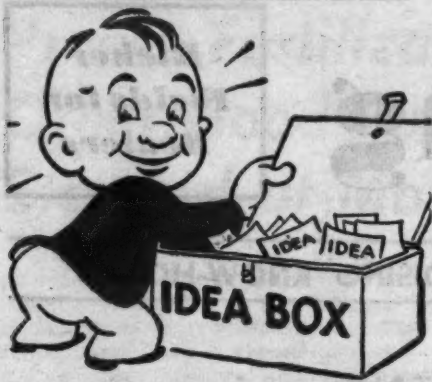
Without quoting the many available figures supporting the facts, I'm sure we can and will agree that our nation's agricultural picture is undergoing a rapid change.

We have a definite pattern established which indicates an even lesser number of farm units in the future, with each unit becoming substantially larger from an acreage standpoint. Improved production methods, modern machinery, competition from other industries, better educational facilities, changed marketing conditions and many other factors have made it increasingly difficult for the small farm operator to compete successfully with his larger counter-

part. We might argue that this change is not in the best interest of our future agricultural position, but since it seems to be inevitable, we need to face this changing situation.

This trend has been the cause for a steady increase in a new kind of farm operation. This man has been designated as the businessman type of farmer. He is a manager of many diversified interests, a friend and confidant of his banker, a planner and a man who recognizes the need for keeping accurate records relative to the conduct of his business. In many cases, due to the increased scope of his operations, he devotes much less time to physical labor,

(Continued on page 16)



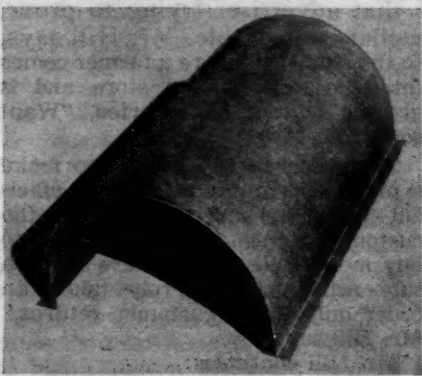
What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6513—Conveyor Cover

The K. E. Savage Co. has designed and is providing a fiber glass conveyor cover, made in 5-ft. lengths. Company officials say that the cover is being used in fertilizer plant installations because the material is impervious to chemicals and can readily be adapted



for use with any corrosive product. The cover is made in a half-circle having an 18-in. radius. There is 4 in. of straight section on each side and a 2-in. heavy flange extending outward and running the 5-ft. length of the cover. An internal flange is provided at each end of the cover to give additional stiffness. The cover was designed to use with 18-, 20- and 24-in. belts, but it can be made to accommodate wider belts. Company officials state

that the units are ideal to cover conveyors running from one building to another to keep out rain. Secure more complete details by checking No. 6513 on the coupon and mailing it to Croplife.

No. 6515—Dispersant

Orzan P, a new member of a group of surface-active, lignin sulfonate chemicals for industry, is now being marketed by the Crown Zellerbach Corp. The product has the property of precipitating readily from solutions and clinging to fibers or other materials present, company officials say. A spray-dried powder, the product may be precipitated from even dilute solutions by the addition of alum. Recommended uses are: as a binder for fibers, retention of fines, an emulsifier, an emulsion stabilizer, a flocculant and a dispersant. Applications in the insecticide field have been made successfully, according to company officials. They add: "It is possible that the farmer, as well as the chemist, will find Orzan useful. A large amount of work has been done by agricultural researchers at Oregon State College, Washington State College and the University of California, as well as private industries, to investigate Orzan's effect on soils and plants. A number of potential applications have resulted. It is known that the product may be used to improve soil structure, improve water penetration, add

organic matter to the soil, supply additional nutrients, improve growth of certain crops and minimize wind erosion." Secure more complete information by checking No. 6515 on the coupon and mailing to Croplife.

No. 6516—Garden Duster

A permanent, re-usable plastic garden duster is being marketed by the Kalo Co. Company officials say that the duster has no inner tube to clog and can be used conveniently with one hand. They continue: "Garden Duster is filled with Plantgard 1% Rotenone-copper garden and rose dust to fight many chewing and sucking insects and fungus diseases in the garden." A caption on the duster reads: "Leaves no dangerous residue when used as directed." To secure more complete information and details of price in quantity lots, check No. 6516 on the coupon and mail it.

No. 6517—Deer Repellent

A deer repellent is now being manufactured by State College Laboratories, a subsidiary of the J. C. Ehrlich Co., under the trade name of College Brand Magic Circle. The new product is claimed to be a foolproof, easy-to-use chemical that is mixed in proportions of one part to 100 parts of water and applied as a spray. It can be used by itself or mixed with almost any ordinary insecticide and fungicide. According to the company, property owners can spray a ring around their shrubs, grain fields, gardens or orchards, and deer—and in most cases—beavers, woodchucks, raccoons and skunks will keep away. One spray is claimed to last for 30 days. One- and 5-gallon containers are being marketed. Check No. 6517 on the coupon and mail it to secure more complete details.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

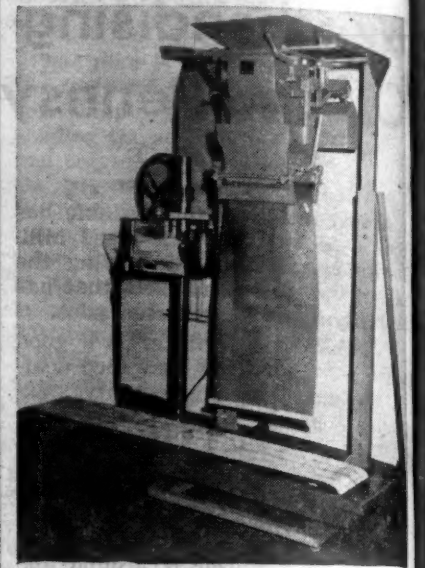
No. 6510—Insect Handbook

"Handbook of the Insect World" is the latest of a series of educational aids published by the Hercules Powder Co. A total of 532 insect illustrations, with a brief description and approximate size of each insect, is in the booklet. The insects are classified by entomological order. The booklet is designed to appeal to farmers, gardeners, students and others connected with the insecticide industry. Hercules researchers spent two years in preparing the handbook from available entomology textbooks and U.S.

Department of Agriculture literature according to company officials. Secure a copy of the handbook by checking No. 6510 on the coupon and mailing it to Croplife.

No. 5595—Scale-Sewing Machine

The Burrows Equipment Co. announces a new combination bagging scale and sewing machine. The Apex bagging scale combines weighing and filling in one semi-automatic operation. The scale will weigh grain, feed, seed, chemicals and most types of



free flowing material at the rate of six to ten bags per minute, it is claimed. The unit is available with either fixed style bag clamp, or adjustable clamp to handle bags from 25 lb. to 200 lb. The scale is mounted on a steel frame which is adjustable for different height bags. The frame is mounted on casters. It is independent of the sewing machine and conveyor. The sewing machine with conveyor belt will sew paper, cloth and burlap bags. The sewing head is adjustable to any size bag up to 40 to 48 in. The conveyor is 6 ft. long, powered with a heavy duty gear head motor and chain reduction operated by foot pedal control. For further details check No. 5595 on the coupon and mail it to this

No. 4064—Wire Screens

The Cleveland Wire Cloth & Manufacturing Co. has prepared a new two-color illustrated folder which combines a brief history of the company with partial cataloging of the most popular wire screen items. The folder is entitled, "Quality Wire Screen," and may be obtained by checking No. 4064 on the coupon and mailing it to this publication.

No. 6512—Paper Brochure

The Olin Mathieson Chemical Corp., forest products division, has prepared a brochure explaining how Kraft paper is made. The division produces multiwall bags and other paper bags and container products. The brochure provides company information and lists principal products, including its agricultural chemicals. Secure the brochure by checking No. 6512 on the coupon and mailing it to Croplife.

No. 6508—Liquid Plant Food

The H. D. Campbell Co. is now offering a ready-to-use liquid plant food in a household-size plastic squeeze container. The product, called by the trade name of Gro-Green, is packaged in a 4-oz. size that is suited for the feeding of potted plants, flowers and for similar household uses. The liquid is sprayed in small amounts directly on the leaves of the plant after watering. Company officials state that "Foliage Dietene," an ingredient found in the product, makes possible successful leaf feeding by breaking down the surface tension

Send me information on the items marked:

- | | |
|---|--|
| <input type="checkbox"/> No. 4064—Wire Screens | <input type="checkbox"/> No. 6511—Forest Fertilization |
| <input type="checkbox"/> No. 5583—Bagger, Weigher | <input type="checkbox"/> No. 6512—Paper Brochure |
| <input type="checkbox"/> No. 5595—Scale | <input type="checkbox"/> No. 6513—Conveyor Cover |
| <input type="checkbox"/> No. 6507—Car Apron | <input type="checkbox"/> No. 6514—Film Catalog |
| <input type="checkbox"/> No. 6508—Plant Food | <input type="checkbox"/> No. 6515—Dispersant |
| <input type="checkbox"/> No. 6509—Catalog | <input type="checkbox"/> No. 6516—Garden Duster |
| <input type="checkbox"/> No. 6510—Insect Handbook | <input type="checkbox"/> No. 6517—Deer Repellent |

NAME

COMPANY

ADDRESS

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS
PERMIT No. 2
(Sec. 34.9,
P. L. & R.)
MINNEAPOLIS,
MINN.

BUSINESS REPLY ENVELOPE

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

P. O. Box 67

Reader Service Dept.

Minneapolis 1, Minn.

leaves and enabling plant nutrients to be quickly and completely absorbed by the leaf surface. To secure more complete information about the product and quantity price quotations check No. 6508 on the coupon and mail it to Croplife.

No. 6514—Film Catalog

The manner in which the steel industry contributes products to the fertilizer industry is depicted in one of several films available through the United States Steel Corp. The film, "The Waiting Harvest," is one of many listed in a new catalog describing motion pictures distributed by the company. Secure the catalog by checking No. 6514 on the coupon and mailing it to this publication.

No. 6507—Freight Car Apron

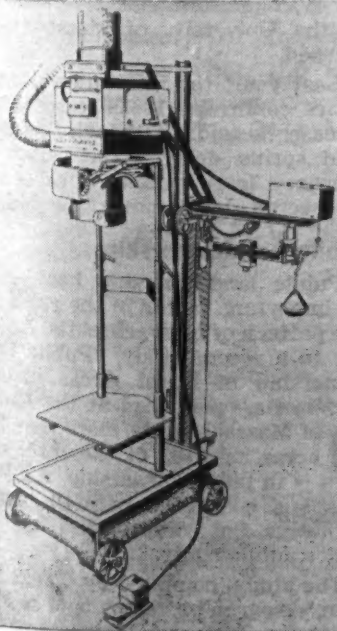
The Lite Line Industries division, Copperloy Corp., has announced the development of a new flat apron. Designed to use as bridging between flat cars in truck-rail piggy back service, the aprons can also be used for other applications where bridging is necessary for the movement of heavily loaded vehicles. The aprons are used in pairs. Each weighs less than 100 lb. and measures 30 by 56 in. Other special sizes are also available. Check No. 6507 on the coupon and mail it to Croplife to receive more complete details.

No. 6509—Catalog

Publication of a new general product catalog containing more than 375 basic industrial, agricultural and pharmaceutical chemicals is announced by the Dow Chemical Co. The 40-page edition includes descriptive information on principal product groups of Dow chemicals. Detailed information is given in tabular form for quick, easy reference. Information helpful for purchasing agents and technical personnel has been included. The index printed with last year's edition is now an integral part of the catalog. Included among the product groups listed are agricultural chemicals. A copy is available by checking No. 6509 on the coupon and mailing it to Croplife.

No. 5583—Bagger, Weigher

The Seedburo Equipment Co. announces the addition of Waymatic bagging scale to its line of testing, grading and handling equipment. "This one-man unit provides an



economical way to convert any platform scale into a completely automatic bagger-weigher for grain, feed, seed, chemicals or practically any free-flowing dry materials," company

officials state. The unit can be installed in less than an hour and fills and weighs 6-8 bags a minute. A belt conveyor is available for moving bags from scale to sticher. A free descriptive folder may be obtained by checking No. 5583 on the coupon and mailing it to this publication.

No. 6511—Forest Fertilization

The Nitrogen Division, Allied Chemical & Dye Corp., has published a booklet called, "The Use of Commercial Fertilizers—Particularly Nitrogen—in Forestry." Hermann Mayer-Krapoll is the author of the booklet, which was originally published in German and translated into English through the efforts of Nitrogen Division. The booklet's foreword states that the use of soil nutrients, with the exception of lime, has not progressed much in forestry until very recently. The one exception is in nursery management. The foreword continues: "The success obtained (in forest fertilization tests) is surprisingly great and gives reason to believe that the prospects of systemic fertilization of the forests are very promising." To secure the booklet check No. 6511 on the coupon and mail it to Croplife.

SHIELE

(Continued from page 9)

the use of fertilizer which naturally makes it easier for us to sell."

Mr. Shiele has an assortment of spreaders that he loans out to farmers, from the smallest hand pushed spreader to a large 12 foot tractor drawn model. It is his policy to loan a spreader to a farmer just to get him started using his fertilizer, but after a few seasons, will ask that customer to obtain his own. The demand for his spreaders plus the repair work that he has had to do on them has been the reason for asking farmers to buy their own.

"Once a farmer buys his own spreader, he will use fertilizer religiously. Then all we have to do is make sure that we keep our foot-in-the-door insofar as fertilizer is concerned."

Pre-seasonal letters are sent out to all customers promoting the fertilizer handled by this dealer. It is backed up with newspaper advertising in the weekly farm papers and fertilizer literature is left off at each farm house by the driver delivering a load of feed. By the time that a sample offering of fertilizer comes around, the customer is ready for it, and this has been the actual sale maker.

"Actually, we have two heavy fertilizer seasons," says Mr. Shiele, "early spring and fall. And by timing our promotional idea with this time of the year, we get heavy distribution with a minimum of actual effort."

An assortment of fertilizer quantities is featured in the store so that customers can pick up a small quantity as an incentive purchase. Fertilizer is featured all year round so that it makes an impression on store traffic. Sooner or later, a customer decides to make his own "test" of the fertilizer on a small section of his field, and by keeping in contact with this customer, a greater volume of fertilizer can be sold him eventually.

North Dakota Tonnage

BISMARCK, N.D.—Fertilizer sales in North Dakota during the first half of 1956 totaled 58,138 tons, according to R. O. Baird, state food commissioner and chemist. The total included 20,748 tons of mixed goods and 37,390 tons of materials.

Study Indicates Best Way To Control Grape Girdler

WALTHAM, MASS.—A report on the grape cane girdler has been made by Prof. W. D. Whitcomb, department of entomology, Waltham Field Station of the University of Massachusetts, in which he finds that natural enemies have had no significant effect on the abundance of this pest.

"The grape cane girdler was very abundant on backyard grape vines from 1936 to 1945 and has since continued normally abundant in favorable locations," he reports. "It is most easily found in Middlesex, Norfolk, Bristol, and Plymouth counties. The southernmost collection on record for Massachusetts is at Middleboro, with the northernmost at Dunstable."

"The grapevine was the only plant apparently attacked by the grape cane girdler in Massachusetts. All varieties of cultivated grapes under observation have been attacked. These include Niagara, Concord, Delaware, Moore's Early, Salem, Brighton, Fredonia, Caco, Elvira and Hartford."

"The most obvious and spectacular injury by the grape cane girdler is caused by the female beetle when it girdles the new canes causing them to break. When the beetles were numerous, 5 to 50% of the canes on an isolated vine were girdled; but on the trellises and arbors used in our experiments, the number of injured canes seldom exceeded 20%."

"In the laboratory, beetles have been killed consistently when exposed on grape canes sprayed with DDT, lead arsenate, benzene hexachloride, lindane and several other insecticides."

"No canes were girdled when 8 or 10 beetles were confined with grape shoots in water or with potted grapevines sprayed with these insecticides. In these experiments, the beetles lived one to six days and averaged less than one feeding scar per beetle before they died."

"The important factor in controlling the grape cane girdler in the vineyard is the time of application. This is determined by temperature, which governs the activity of the beetles, and the rate of growth of the canes. The average growth of canes during the last week in May and the first week in June when beetle activity is greatest, is about one inch a day."

"Experimental applications of many insecticides and combinations in the vineyards in a five year period have indicated that a satisfactory interval between sprays is about one week, by which time the new canes have attained a growth of approximately six inches. Applications every four or five days may be necessary when the pest is abundant, or when growth of the canes is abnormally rapid, and an interval of 10 days or more is likely to be unsatisfactory."

"DDT, lead arsenate, lindane and methoxychlor have given satisfactory protection, but the most effective spray was a 'general purpose' formulation containing methoxychlor, malathion and captan," it was reported.

Connecticut Scientist Gets Agronomy Honor

NEW HAVEN, CONN.—Dr. C. L. W. Swanson of the Connecticut Agricultural Experiment Station, New Haven, was elected a Fellow of the American Society of Agronomy at its annual meeting in Cincinnati, for his contributions to research in soils. This is the highest honor bestowed on soil scientists by the society.

Dr. Swanson has been active in investigations on soil fertility and the management of soils for increased crop production. In 1951 he was the recipient of the Stevenson Award of the Society, for his research in soils.



By RAYMOND ROSSON

County Agent, Washington County, Tenn.

"What we belong to is as important as what belongs to us." One of our farm community leaders said this while some 1,500 farm people were attending the Thanksgiving Festival, prior to the "Burley Bowl" parade on Thanksgiving day. The parade consisted of numerous floats, representing the organized community clubs, and each float had a community queen. Some 35,000 people saw the parade.

We just had to repeat what the farm leader said, because we thought it an exceptionally meaty idea. So we began to wonder, "What should we belong to," and we submit the following . . .

First, we belong to our Creator . . . our ancestry . . . our homes . . . our family . . . our church, even if we should not be members . . . our community . . . our county . . . our state and our country.

Anything or everything . . . Just what is our share in these United States? It is a pretty good country . . . where did it all come from; who built it; who paid for it and how are we keeping it up?

How would the group of people born between 1875 and 1905 answer the questions . . . and how would those born between 1905 and 1940 answer them? Which group will have the greater number offering "thanks" for America before breakfast each morning?

The older group is pretty proud of the way they and their parents made decisions, out at the "cross-roads" and it takes more than a whim to throw them off course; because they haven't always had plenty . . . some people think that we've always had plenty and that we deserve it . . . or do we?

29 Ton Yield Tops New Jersey Tomato Club

ATLANTIC CITY—Everett Adams of Vincentown, N.J. has received a \$100 bond for being top man in yield in the New Jersey Ten-Ton Tomato Club. He nearly tripled minimum requirements for membership by growing 29.20 tons to the acre on 10 1/4 acres. Arthur D. Chant of Beverly was second high with 29.01 tons to the acre, and Joseph E. Rudderow of Moorestown was third with 27.66.

Charles H. Nissley, extension vegetable specialist at the College of Agriculture, Rutgers University, said this year's Ten-Ton Club has 719 members. Member-wise, this is the second best year in history of the club. In 1952, another good growing year, the club had 767 members.

In 1934, the first year of the club, only 12 growers produced the 10 tons or more per acre to qualify. The Ten-Ton Club is sponsored by the extension service and the New Jersey Canners' Assn.

SOILS CONFERENCE

ST. PAUL—A crops and soils conference will be held at the University of Minnesota Institute of Agriculture here Feb. 11-12.

Better Selling

Richer Sales Fields for Dealers

CROPLIFE, Dec. 24, 1956



Doing Business With

Oscar & Pat



By AL P. NELSON
Croplife Special Writer

It was the Christmas season, and in the office of Schoenfeld & McGillicuddy, there were a couple of small silvered yule trees about one foot high on the filing cases, and red bells and green tree boughs hanging from the ceiling.

Oscar Schoenfeld, the balding, rotund and pot bellied partner of the firm, wore a frown these days, even though the Christmas spirit was everywhere. Oscar was not in favor of these decorations; they constituted unnecessary cost, he said. Such decorations were for gift shops, and other luxury stores, not for a feed and fertilizer firm. But Pat had bought them anyway and plump Tillie Mason, the bookkeeper, had happily put them up.

Pat McGillicuddy, the tall, blue eyed Irish partner came in, took off his long grey storm coat and grey fur cap, then sat down rubbing his chilled hands. "Ah, I love these brisk December days, Oscar," he said. "Folks are happy, even tho it's cold. That's what Christmas does to people."

Oscar only grunted and went on figuring discounts.

Pat thumbed through his magazines, then looked up. "Oscar," he said, "we did pretty well this year didn't we—profitwise?"

Again Oscar grunted.

"I thought so," Pat said. "And I was just thinkin' that it is Christmas, and about time we split a melon, Oscar."

Oscar said nothing.

Pat's expression was serious. "Oscar, did you hear what I said?"

"Ach, I heard, all right. I am not in favor of it."

Pat looked puzzled. "But we always split a melon at Christmas. At least we did other years. And you admit we made a good profit this year. So, why not split the melon now? I need the money, that's for sure."

Oscar coughed. "McGillicuddy," he said sharply, "I have been thinking—we should not split a melon this year."

Now Pat was really surprised. "Well, why not?"

Oscar frowned a little. "I just wish that I had thought of it a couple of years ago, McGillicuddy, then we would have been so much ahead."

"I don't get you."

Oscar shrugged. "If we don't split a melon, then we will have just so much more money in the reserve account that we can use to take our discounts, pay our bills and wages without borrowing money from the bank. We'll save 6% on those bank loans. We have been foolish, Pat, to take that melon money every year."

Fire flashed into Pat's blue eyes. "Now look here, Oscar," he said sharply. "We are in business to make profit for ourselves, and we need profits to live on. Let's not plow it all back into the business."

"Why not? Ach, if it makes it so we don't have to borrow from the bank?"

"Well," Pat said. "Too much is too much."

Oscar smiled thinly. "There is only one way we can still split a melon and save bank loans."

"Don't tell me," Pat said. "I know. You mean, collect our money faster."

Oscar nodded. "Well, what's wrong

with that? Why should those chisellers keep our merchandise and not pay us for 30, 60 and 90 days—without interest? We are supposed to eat in the meantime."

"But most of them pay eventually."

"Ach, and until they pay we must scrimp and save and then borrow money from the bank at 6% to keep the business going! What kind of monkey shines is that?"

"You have to expect that in business, Oscar. You can't push customers too much for your money."

Oscar grunted. "Some don't need to be pushed. They need to be chloroformed and then we should go through their pockets to get our money. That's how long we have to wait for some of them. No, McGillicuddy, we are not going to split a melon this year. I own 50% of the stock, and ach, I say no. You can't do it without I say so."

Pat's mouth was a little ajar at the news. "But I need the money, Oscar. Nora and I were counting on it."

Oscar smiled thinly again. "Ach, that is too bad. You should never spend what you ain't got yet. That's poor business."

Pat McGillicuddy's ire was making his face red now. Tillie Mason, the ulcerish inclined bookkeeper, got up and went into the washroom. She couldn't stand these quarrels between the partners. Even Ann Hydrous, the Maltese cat, woke from her nap atop the safe and jumped over to a magazine rack and went to sleep again.

"Oscar, you are making a mistake," Pat said. "Both of us are entitled to that money. We need it."

"You do, but I don't," Oscar cor-

rected. "I can live without it, and so can Minnie. We are saving."

"I don't have to live like you do," Pat stormed. "My personal life and habits are my own. You know that."

Oscar wet his lips. "Ach, I have also been thinking, Pat, that if we cut our weekly drawing accounts from \$125 to \$100 per week for a year, then we will save more money for our reserve fund to pay bills. Then I am sure we will not have to borrow from the bank to pay for anything."

Pat was so surprised he just stared at Oscar. "You can't do it!" he finally exclaimed. "I won't let you. If you won't split a melon and say you own 50% of the stock, then I'll say you can't slash our weekly drawing accounts to \$100 each. What works one way also works the other."

Oscar shrugged. "All right. I won't budge."

Pat looked long and hard at his partner. "If I—I take that delinquent list and get out and collect within the next few days—everything but the 30 day accounts, will you split the melon as usual?"

Oscar took a long hard look at his partner, too. His jaw lines were firm. "Ach, I will," he said. "But you will have to get checks that are good. If any of them bounce, the deal is off."

"All right," Pat said angrily. He grabbed the list of delinquent accounts off the desk, put on his storm coat and fur cap and strode swiftly out of the office.

Oscar began to chuckle. It was one of the few times in his life that he had showed such merriment. "Ach, I got him," he exulted.

OVER THE COUNTER

(Continued from page 9)

drills were sold simply because many people wanted quarter inch holes. Let's keep our eye on the real target. Many a woman has bought an automatic washer to avoid backaches.

"It is vital that the owner and employees of any store know the character of their customer's business and his objectives. One person gets into livestock production so he will be working for himself after he has expanded his operations; another, puts first in his mind the production of prize livestock to show at fairs; to still a third, incidental use of certain surplus or even otherwise unusable farm products may be involved. In this last case doubtless a substantial cash income is anticipated as well as food for consumption of the farm family. The important point though—each buyer must be sold on the basis of the dominant thing he or she expects to get out of the purchase.

Something For Nothing

"It is usually not hard to meet and beat competition by emphasizing quality, for people know that they rarely get 'something for nothing.' What do we mean by saying to sell the gadgets too? Simply that if the product is otherwise quite good, it is ordinarily the little extras that spell the difference—SUCCESS!

"To illustrate, a woman who had shopped six different cars said she thought the motors were all alike so she decided to get an automobile which had a vanity case on each side of the back seat.

"Quality products, effective and friendly informed service go far toward creating a successful operation. Even so, advertising is still necessary if expansion is desired.

"Probably this effort should involve use of the classified telephone directory, direct mail, telephone solicitation in the local area, newspaper advertising, exhibits at county and other fairs. Radio advertising may be desired and television is useful for larger producers and distributors of farm chemicals and related products. Membership lists of associations should prove useful in direct mail efforts. Naturally, lists of existing customers would be used. Trade journal or farm journal advertising may serve for some rather specialized purposes.

"Firm or trade names should at every opportunity appear on products, firm stationery, invoices, checks, as well as on signs and delivery equipment.

"Often a store can obtain a public relations tie-in with a railroad or airline with pictures showing your firm's name appearing, say on your delivery truck. Write-ups featuring your firm's name appearing in pictures or writers' columns in newspapers or farm journals are better than advertising. Human interest stories about your personnel, business methods, attendance at association meetings are often good material for publicity. To your customers all these factors are evidence of your progressiveness."

New England News Notes

By GUY LIVINGSTON
Croplife Special Correspondent

The Associated Industries of Massachusetts is calling on the federal government to provide New England with flood control projects that would cost \$31,216,000 during the next year. The association, comprising the leading industrialists of Massachusetts, called on the New England congressional delegation to join forces in the cause of adequate protection.

"New England must henceforth insist soberly and realistically on a more just share of the federal government's generosity with funds which New England gives in taxes," the association said. In the past two years, the association reported, New England's share of appropriations for rivers, harbors and flood controls has been 1.14% of the national total. "This is really incredible," the association spokesman said.

New England's average annual flood losses total \$32,000,000. Without immediate attention to controls, the association said, the region cannot discount the possibility of recurrence of the billion dollar damage caused by the 1954-55 hurricanes. The association's report singled out the Merrimack river as causing "potentially the most dangerous flood site in Massachusetts today."

Sign of Woolly Bear

For those who believe the woolly bear caterpillars, and many do, it's going to be a mild winter in New England, according to Edward J. Duda, Stamford, Conn. entomologist. He said woolly bears were out in abundance and every last one of hundred sighted wore a wide reddish-brown band across the middle.

"According to an old superstition, this is a sure sign that winter will be mild," the entomologist pointed out. "Their record over the past several years isn't too bad. They hit it on the nose five times."

Tree Removal

The Public Works Department in Massachusetts plans to remove about 2,500 trees afflicted with Dutch Elm disease along state highways. In the meantime, measures to control the Dutch elm disease, which last year cost Massachusetts property owners an estimated \$2,000,000, must be continued through the winter, Dr. Francis W. Holmes, shade tree specialist at the University of Massachusetts, warned.

Last year, the institution's laboratories confirmed 10,000 cases of the disease, he said. "Although this year's cold spring delayed the Dutch elm season, a large number of cases were discovered this summer," he added.

Public Landownership

Public landownership has become an important factor in the rural land use pattern of Massachusetts. According to a recent study, "Public Landownership in Rural Areas of Massachusetts," published at the University of Massachusetts, more than 500,000 acres, or 11% of the total rural area is in public ownership. Additional areas, connected with the State's highways and water bodies, are also under public control.

The study, compiled by David Rozman, research professor, and Ruth E. Sherburne, research instructor at the University's department of agricultural economics, indicates that 63.5% of the land in public ownership belongs to the state while 26.2% is under municipal control.



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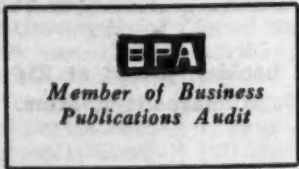
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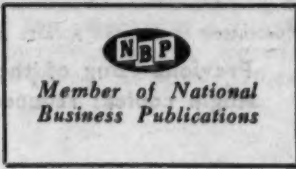
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BUG OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board

Spotted Alfalfa Aphid



How to Identify

This important pest is a small, pale yellow or grayish insect, with from four to six conspicuous rows of dark spots on the back and with "smoky" areas along the wing veins. The illustration above, greatly enlarged, shows both the winged and wingless forms of the spotted alfalfa aphid (*Therioaphis maculata*). When first noted in 1954, it was confused with the yellow clover aphid which has been known for years as a pest of clover in the eastern states. Closer investigation disclosed the fact that the pest is the spotted aphid.

Habits of the Aphid

Peculiarly, the spotted alfalfa aphid can both lay eggs and produce living young. In northern climates, the aphid overwinters in the egg stage and in the spring these eggs hatch into females. These females can produce living young without mating. Generation after generation during the summer produces only these living young, some of which have wings which enable them to seek new food sources. Toward the fall of the year, both males and females are produced. They mate to produce eggs which overwinter and begin the cycle all over again.

Damage Done by Pest

Its rapid spread since being first reported in New Mexico in 1954, has caused authorities to consider this pest as a "threat to all alfalfa-producing areas of the U.S." It attacks the lower leaves of the alfalfa plant, feeding on the bottom

sides of these leaves. Young aphids, produced at the rate of from 2 to 5 a day, kill these lower leaves by their sucking. The pest moves up the stem to upper leaves, ruining the plant as it goes along. Its sticky secretion which coats both leaves and stems, not only acts as a medium for fungi, but reduces the quality of the hay, as well. The sticky honeydew clogs up baling machinery badly.

Control of Spotted Alfalfa Aphid

Both natural control with predators and use of insecticides have been recommended in various areas. Predators thus far have been completely unable to cope with the fast build-up and destructive propensities of the aphid. Thus the use of insecticides must provide an answer. Emphasis has been laid on both timing and application techniques for spray and dust treatments. Successful results have been had from both airplane and ground equipment. Extra care must be taken in thorough application, since the aphids congregate on the under-side of leaves. It is also emphasized that treatment of individual fields is not sufficient, since the winged forms of the pest migrate widely and reproduce rapidly. Cooperation between growers in an area is desired so that all infested fields are treated. In order to know when to apply insecticides for optimum results, careful inspection of fields should be made at least three times a week. Local authorities should be consulted as to the kinds and amounts of pesticides that can be used without leaving illegal amounts of residue at harvest.

Illustration of Spotted Alfalfa Aphid furnished Croplife through courtesy of the University of California.

Previous "Bug of the Week" features have been reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.



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FARM SERVICE DATA

Extension Station Reports

Tangible results can be credited to the Greener Pastures program, which has been operating on Delaware dairy farms over the past seven years.

At the top of the list are savings in feed costs for producers' high quality milk, according to Delmar J. Young, extension dairy specialist with the University of Delaware School of Agriculture.

In summarizing results of the program since 1950, Mr. Young points out that it had encouraged greater use of pastures, silages and hay in farmers' dairy feeding programs and has improved herd health, breeding efficiency and physical condition of Delaware dairy cattle. Use of greater amounts of roughages has brought larger and more growthy 2-year old animals and has meant lower feed costs in producing high-quality milk.

One hundred sixty-two Delaware dairymen have "graduated" from the Greener Pastures program by building up forage programs to an "excellent" rating in the annual judging of their pasture, silage, hay and feeding methods.

Of eighty-nine farmers who made "good" to "excellent" ratings in the 1956 Greener Pastures program, 65 were using small grains for early spring grazing, and 54 were using sudan grass for supplemental grazing in the hot summer months.

Mr. Young noted that seven years of the Greener Pastures program had brought about much greater use of supplemental pastures with the result that the grazing season has been lengthened and on some farms now extends from late March until mid-October.

As farmers have learned to keep the right balance between ladino clover and orchard grass in their pastures, milk production has increased. A much greater use of both permanent and temporary silos also has been noted since the Greener Pastures work began. Feeding of silage has increased as dairymen have found how to use silage preservatives efficiently.

Mr. Young points out that there has been an increase in the seeding of high-yielding alfalfa and alfalfa grass mixtures during the past five years and that several dairymen this past year reported hay yields greater than four tons of feed (dry weight) per acre. There has been a noticeable increase in hay quality through earlier cutting and greater care in harvest and storage. And more dairymen are using air driers and air-heat driers to cure hay quickly and reduce losses from weather damage, Mr. Young observes.

★

A new insecticide, Guthion, is being tested for the control of insects and mites at Waltham (Mass.) Field Station under the direction of the pomology department of the University of Massachusetts. The new insecticide, several of which are evaluated each season, shows promise, entomologists said, and is being tested for its effectiveness under Massachusetts conditions and for its compatibility with common fungicides.

An original orchard was planted in 1926 consisting of 12 trees each of the New England seven varieties set in adjoining rows so that sprays applied to rows would show the pest control, foliage injury and fruit russet from

a pesticide treatment on each of these varieties.

Since then, rows of Golden Delicious, Macoun, Kendall and a block of miscellaneous varieties have been added. Recently, about 70 trees mostly McIntosh, Cortland and Delicious were planted, and when these reach bearing age, many of the older trees will be removed to release the land for other use. In addition there is an orchard of about 60 trees consisting of Baldwin, Golden Delicious, Starking and Macoun on Malling Stock III, IV and V which was planned by Dr. J. K. Shaw before his retirement.

These trees are used entirely for pest control studies, a part by the department of botany under the direction of Dr. E. F. Guba and a part by the department of entomology under the direction of Prof. W. D. Whitcomb.

★

Infestations of mites, an almost microscopic pest of apples, were found to reduce yields of Cortland by almost two thirds and of Red Delicious by more than a third in tests carried on by entomologists at the New York State Experiment Station at Geneva.

Despite these marked reductions in yields, there was little visible indication of damage from the feeding of the pest, say the Cornell and state university scientists who conducted the studies.

Leaf injury was evident on untreated Red Delicious trees, but the Cortland trees displayed only a rather uniform paling of the leaves that would not be noticed by the casual observer, say the scientists.

There was virtually no dropping of leaves or fruit from either mite-injured or mite-free trees, nor was there any effect on fruit size. No appreciable difference in growth of mite-infested and mite-free trees could be detected.

The experiments were carried on in young orchards in which mites were held in check on one half of the trees in each orchard, while they were left uncontrolled in the other half. The European red mite and the two-spotted spider mite were the chief species involved. Records were made on growth and fruitfulness for two seasons.

"The most striking response to mite activity noted the second year was the difference in amount of bloom on the Cortland trees," comment the station workers. "It was much lighter in trees where the mites had not been controlled. Forty-seven mite-free trees produced an average of 343 blossom clusters, while 47 mite-infested trees produced an average of only 86 clusters." This is believed to be due to interference by the mites with fruit bud formation the previous season.

★

From Purdue University comes word that fall and early winter are particularly favorable times for taking soil samples. R. D. Bronson, Purdue agronomist, says the soil is usually in good condition for testing in the fall and early winter. Another advantage is that testing laboratories can give prompt attention to the soil samples. Also important, says Mr. Bronson, is the fact that there is plenty of time to get the grades and ratios of plant food to meet the recommendations of the testing laboratory.



RINGING THE cash register

Merchandising Hints for The Retailer

Handling Complaints

There are various techniques for dealing with complaints. One retailer, for example, operates on the theory that 98% of all customers are sincere when complaining. The retailer figured that even if, technically, in some cases there was no basis for complaint, the fact that the customer was sincere compelled the firm to make some sort of adjustment. Whether or not you accept this theory, the first step is to get the complaining customer in a reasoning frame of mind. If possible, both the adjuster and customer should be seated, and the customer should have all the time he wants to explain his point of view. One store owner says: "Let the customer get everything off his chest before you say anything at all. Don't blame the customer or argue with him. Suggest that you'll do something by way of adjustment, thus showing that you recognize the customer's rights and opinions. Usually, when a customer sees that the merchant wants to be fair, the customer tries to be fair, also."

4 Steps to More Sales

Four steps for improving the farm dealer's business were listed by an industry consultant at a recent meeting. He said: 1. Decide what margins you must have to make a profit out of your business. Set those margins and stick to them. 2. Decide whom you can afford to sell and eliminate that business which is costing you money every day. (You may be surprised and slightly shocked at the percentage of your customers who actually cost you money every time your truck stops at their door.) 3. Build your strong customers who want to grow into bigger customers—carefully and on a sound basis. 4. Start a prospecting program for finding new prospects who want to grow.

Signs Give The Answers

Signs, like good informative packaging, is an important part of the over-all merchandising picture, states a merchandising expert associated with Sears, Roebuck & Co. Good informative signs not only aid the customer in making his selection, but in many instances, train the sales person by keeping him informed of specific selling features of the merchandise concerned. Good signs incorporate all of the features not obvious in the merchandise itself. Merchandise can sell itself with the aid of an effective sign program that anticipates and answers the customer's questions—thus becoming a silent salesman in augmenting the efforts of selling personnel, claims the Sears merchandiser.

Newspaper ads which get the reader's attention, tell a complete sales story and persuade him to buy are the ones which ring the cash register. Not all ads, of course,

fall into this category. Experience has shown — and objective newspaper studies back up the theory — that folks read and act upon advertising that sells products and services through local proof, rather than general statements about performance. A recent issue of the Merchant's Checkergraph, publication of the Ralston Purina Co., illustrated the point by reproducing two newspaper ads side by side—one of a general nature and the other with a "local" angle. The ad with a "local" picture and copy scored 40 (read by 40% of the farmers polled) as against 10 scored by the "canned" ad.



Local Ads Score High

1/2c for \$1 Of Business

The importance of advertising by the farm retailer is emphasized by Prof. Henry H. Bakken, University of Wisconsin, in analyzing a Wisconsin survey of feed dealers. He says: "From our limited analysis in the survey it looks like each one-half cent or less spent for advertising brings in an additional dollar of business. If your gross margin is 15% on each dollar of sales it would seem to be good business to do more advertising."

ON-THE-FARM MERCHANDISING

(Continued from page 9)

with more being given to planning and direction. He is often an employer and as such must assume the additional responsibilities involved.

One substantial difference is the changed investment picture. Due to the increased size of individual farm units, plus currently higher valuations, his farming operation represents a proportionately greater investment than in the past. In addition to increased land and building values, his equipment requirements are substantially greater. Even his requirements for operating capital are at higher levels. We should certainly not overlook the improved standard of living that he has come to accept. It takes a lot of capital to set up a farm operation under current conditions. The homesteader of today has far less chance to survive than was the case in the past.

In many areas today, the individual farm investment represents a substantially greater outlay of capital than that required by a high proportion of the local business firms.

Farming Is Big Business

Farming has rapidly become big business and all predictions point toward it becoming bigger. The individuals who conduct large scale operations are entitled to be treated as business men. Because of his expanded activities, the farmer's time is rapidly becoming more valuable.

Perhaps the previous information will help to point up the idea we are trying to get across. Let's take a look at your community or any other of your choosing. If a new merchant opens his doors he is immediately exposed to many salesmen offering their respective lines. Does the salesman who offers merchandise to this merchant neglect to see him again because of failure to make a sale on the first few calls? Does the salesman who secures the initial order assume that there is no necessity for further contact? We all know the answer to both of these questions. Regular contact by possible suppliers continues as long as the business is in existence.

By way of contrast, it appears that in many cases, the farmer, who frequently offers far greater purchasing capacity, is neglected at his place of business by the man who should be most interested, his local farm merchant. Instead of actively soliciting the farmer's business, he has apparently assumed that if the farmer wants the product he has for sale, he'll come by and order it from him. Far too many local dealers have taken the stand that they can't afford to make on-the-farm contacts, without thoroughly exploring all of the possibilities. It is my firm conviction that with the exception of isolated circumstances, the dealer who wants to grow and prosper, can't afford not to make such contacts.

On-the-Farm Selling Advantages

On-the-farm merchandising, in the form of a regular, organized, outside selling program, offers the farm dealer the greatest opportunity to successfully meet the challenge of 1957. The plan can pay off in many ways, both tangible and intangible. Let's take a look at some of the advantages accruing to the dealer who takes his proposition to the farmer.

1. It is definitely established in the farmer's mind that the dealer values his business.
2. More creative selling promotion is possible, when individual potentials and needs are determined through on-the-farm analysis.
3. The dealer is better able to retain present business, since he is in a better position to determine that

products are being properly used for maximum results.

4. The dealer is able to prevent loss of business which sometimes results from misunderstandings, or minor irritations. The contact man has a chance to correct such situations.

5. Regular farm calls on an organized basis can help to reduce delivery costs, and enable the dealer to operate with a lower inventory for improved merchandise turnover.

6. Through regular contacts, accounts receivable can be better controlled, and bad debt losses minimized. Dealer will be able to make better use of his operating capital.

7. By making regular farm calls, the dealer is able to stress the service angle in the most effective way to offer assistance to the farmer with his problems.

8. The dealer acquires community prestige on the basis of field representation.

Definite Schedule Needed

To be successful, an outside selling program must be organized and operated on a regular basis. All dealers would not be justified in having a full-time outside salesman. Thus, it is important that a definite schedule be established for on-the-farm selling. This may vary from one to five days per week according to the need and available manpower. The important factor is to maintain a regular schedule once the program has been started. In too many areas the outside man is unable to perform his job on a regular basis, due to other job requirements, and much of his effectiveness is lost. Any farm contacts help but when done on an irregular basis the cost is often prohibitive.

Common Objections

Dealers give a variety of reasons for their failure to adopt, and put into effect, outside selling programs. Some are:

1. I can't afford to pay a salesman and his expenses, because the cost will be greater than the profit to be made.
2. I'm satisfied with my present volume. Don't believe an outside man could help it much.
3. I can't find the right man for the job.
4. I won't be able to train a man myself and I don't believe a salesman can get the job done as infrequently as he is in this market.
5. Farmers will resent it if I have a salesman call on them regularly.
6. This business never had to beg for trade and I'm not going to start now.
7. My other employees will resent the time the outside man spends selling because his job will be much easier than theirs.

Most of us recognize that these reasons are fallacies and they generally come from the dealer who has never tried outside selling, or at best, has made a half-hearted attempt. They seldom come from the young, aggressive farm merchant, who wants to become a greater factor in his market, but rather from the man who has been reasonably successful in the past, when conditions were different, and is now content to stand put until such time as he can retire. In some few cases dealers have been improperly advised when installing an outside selling program and have become soured on the entire proposition.

Important Success Factor

It has been my privilege, and I am sincere in the use of this word, to operate several different retail

stores, since becoming associated with the feed industry. Additionally, it has been my pleasure to manage a group of farm stores for one of the major manufacturers. On the basis of personal observation, I can truthfully say that even in the smallest, on-the-farm selling was an important factor to success.

While engaged in the management of one farm store, with a total of three employees, including myself, we still maintained an organized outside selling program. Our truck driver helped in the warehouse and our bookkeeper did likewise, along with waiting on store trade. I personally maintained the outside selling program on a regular basis three days each week and am convinced it paid off in profit for the business. It was a vital factor in building a volume that subsequently required a staff of nine employees, earning larger profits.

At another point it was my privilege to direct the activities of two outside salesmen, each working five regular routes per week. Insofar as weather conditions permitted, all 10 sales routes were operated on a regular basis. As manager of the business it was beneficial to me to substitute for these men when vacations, illness, meetings or other emergencies necessitated their absence. Many of our customers came to the store very irregularly and some not at all. The substitution provided me with a wonderful opportunity to build an solidify our customer relations. The maintenance of such relations between management and the customer is a vital key to success in the retail farm supply business.

I think of another instance where two dealers with about the same volume were operating in markets of comparable size. The dealer in one market arrived at the decision his outside selling program was costing too much in relation to the volume he was doing. He discontinued outside selling on a regular basis, but continued to do some service work. He felt that he would be able to retain most of his regular business. The net result for this dealer was a substantial decline in both volume and profits, with the additional need for reducing personnel. Within less than a year this dealer had resumed his outside selling program, knowing that a rebuilding job was required.

During this same period the dealer who had continued organized outside selling showed a substantial increase in both volume and profits. He has continued this progress, and become the dominant dealer in his market. He has capitalized on a sound on-the-farm program for organized outside selling.

Outside Selling Essential

It is my personal belief that long-term success on the part of the farm merchant will be to a considerable degree contingent upon developing a strong, outside selling program. If such a plan is instituted on a limited, but regular basis, and expanded as required, costs can be maintained at a level to permit profits to the owner. If I were to again assume the management or ownership of a retail farm store, a temporary loss picture would be accepted in order to get such a program started. There's a pay-off far greater than can be measured on an immediate basis.

Manufacturer's Position

The question arises as to the manufacturer's position in an outside selling program. Our men have additional responsibilities beyond persuading a dealer to adopt an outside selling program. It is their responsibility to train the man selected and to work with him on a regular basis. We don't want to transfer the full load for making on-the-farm contacts to the dealer organization.

Our territory representatives have a definite assignment on farm resale calls, whether accompanied by the dealer or alone. We believe they are essential to tonnage growth and try to set an example for the dealer in this respect. Our best men spend their time in the country, not in the dealer's place of business. It is the rare man who can train another to do outside selling on a profitable basis who is not capable of doing a good job on farm calls himself. We don't want our men to be so burdened with details that they have no time to maintain their personal selling program.

Another phase of on-the-farm merchandising, which in too many cases has been neglected, is concerned with the promotion of farmer meetings in suitable rural areas. The dealer's outside salesman, as well as the manufacturer's representative, can make better utilization of their time when sales efforts can be directed toward a group of prospects, rather than an individual. Meetings offer an opportunity to create interest where previous individual calls have failed.

Farmer Is Key Factor

Whether we want to acknowledge the situation or not, the farmer himself is the determining factor in the success of any merchandising program. Furthermore, because of the ready accessibility of information from all areas, he is in a position to be critical of the dealer who does not offer services comparable to those received by farmers in other localities. Farmers are now spending more time in studying the operations of successful people in their own field, and in adapting this knowledge to their own use. The wise farm dealer will do well to do likewise, where merchandising plans are concerned. Delaying too long could result in the loss of volume to a competitor.

Most of us have been around sufficiently long enough to observe substantial changes in merchandising, not only in our own field, but most others as well. We have seen the changes in individual buying habits. We know that ideas about values have changed. As price differentials tend to become less and competitive lines reach a comparable level of value, other factors tend to determine where purchases will be made. Some of these are:

1. Physical appearance of merchandise. Is it clean, well-packaged, and fresh in appearance?
2. The service that is behind the product.
3. Courtesy of the sales personnel.
4. Personal acquaintance and confidence.
5. Convenience of purchase.

These points do not cover all the reasons for making purchases from a merchant but will be sufficient for our purpose.

We have seen a big change in grocery merchandising which has diverted the bulk of the business to supermarkets, whether they be owned by individuals or chains. This is true in both large and small towns. My wife buys from a particular supermarket because of the variety of well-displayed merchandise offered, the courtesy of the personnel and the convenience offered.

However, when it is a question of buying a major appliance item, her primary interest then becomes the type of service she can expect from the dealer in the event difficulties arise. She isn't particularly interested in how the merchandise is displayed or the convenience of point of purchase.

I'd be willing to wager the same is true in your own family and that different reasons will be given according to the type of merchandise.

The year 1957, as well as those beyond that time, do offer a real challenge.

Growth of Aerial Pest Control Cited in USDA Report

WASHINGTON—Aerial operations against insects under state-USDA contracts in 1956 were the most extensive in history, the U.S. Department of Agriculture has reported. The increasing importance of aircraft in the battle against insects harmful to farm crops is shown by the large acreage treated from the air this year under federal-state contracts.

Aircraft sprayed and dusted insecticides on areas throughout the United States totaling more than 5 million acres. This figure is swelled to some 9 million acres if repeated treatments against the Mediterranean fruit fly are counted, say plant-pest control officials of USDA's Agricultural Research Service.

By comparison, a total of 4.2 million acres was treated under federal-state contract in 1950; 1.9 million in 1951; 1.5 million in 1952; 1.4 million in 1953; 2.5 million in 1954 and 4.2 million acres in 1955.

Neither these figures nor those for 1956 include the large acreages treated by air each year for farmers and ranchers by commercial firms.

In the 1956 federal-state cooperative aerial programs, four insects—grasshoppers, spruce budworms, Mediterranean fruit flies, and gypsy-moths—were targets from the air on about 5 million acres, not counting repeat treatments. Briefly, here's what was done by aircraft on that 4-insect front:

In the grasshopper control program airplanes covered some 2 million acres of rangeland in 10 western states. About 1.4 million acres of forest land in Montana and Idaho were treated to control the spruce budworm.

After the Mediterranean fruit fly struck orchards and vegetable gardens in a ¼-million-acre area in Florida, much of the infested area was sprayed by planes several times, aggregating over 4.5 million acres of spray treatments through September, 1956. In the gypsy-moth control project, about 1 million acres of forests in eight northeastern states and Michigan were treated from the air.

Other important air attacks on insects in 1956 federal-state operations were: Mormon cricket control on 58,000 acres in 5 western states; beetle-larva control on 12,000 acres in Idaho; tussock-moth control on 10,000 acres in three states; and spittlebug control on 3,000 acres in Wisconsin and Michigan.

November Coke Oven Ammonium Output Down From Year Ago

WASHINGTON—Production of coke oven ammonium sulfate during October totaled 158,198,749 lb., a decline from 166,528,000 lb. in October, 1955, the Bureau of Mines has reported. Output for the first ten months this year amounted to 1,453,992,876 lb. compared with 1,630,492,100 lb. in a corresponding period in 1955.

Sales in October totaled 128,763,444 lb., down from 138,260,800 lb. in October last year. Stocks on hand at the end of October totaled 404,361,697 lb., a gain from 383,255,321 lb. a year earlier.

FARM SUPPLY STORE

VANCOUVER, WASH.—Columbia Farmers Supply Assn. will construct a farm supply store and service station fronting the Pacific highway at N.E. 78th St., an area called Hazel Dell, according to Bob Mautz, manager. The group's store is now located downtown.



Edward F. Wagner

E. F. Wagner Named To New Witco Post

NEW YORK, N.Y.—Appointment of Dr. Edward F. Wagner to the newly created position of manager of development was announced recently by Max A. Minnig, president of Witco Chemical Co.

In his new position, Dr. Wagner will develop and carry out an over-all program designed to broaden the manufacturing activities of Witco and its wholly owned subsidiaries, Emulsol Chemical Corp., Chicago, Ill., and Ultra Chemical Works, Paterson, N.J.

To assist in this expansion program, a development committee was also organized with Dr. Wagner as chairman. Other members are Dr. M. M. Gladstone, manager of technical service for Emulsol Chemical Corp. and Albert Sharpouse, executive vice president of Ultra Chemical Works.

Dr. Wagner, who was formerly director of Witco's technical service laboratory, Chicago, received his doctorate from Illinois Institute of Technology.

FREIGHT HIKE

(Continued from page 1)

will mean that the imports of potash from western Europe and eastern Europe-Poland and those countries will be a hotly competitive commodity with U.S. sources of potash which originate in Carlsbad, N.M.

For the West Coast, informed sources say that every increase in rail tariffs will mean a substantial reduction in shipment of perishable commodities from the West Coast to urban markets in the east.

From what can be ascertained here in the nation's Capital, that is not so. Folks here believe that truck movements of all West Coast commodities will offset the decline on rail movement and that the pesticide and fertilizer industry will ultimately gain its advantage when it by-passes the rail carriers and moves its commodities by truck.

A reliable source told Croplife that the new rail freight rate boost can only mean a substantial reduction in rail shipments. This local source states that in interstate shipment of California grades to eastern markets that truck movements account for more than one third of the time-consuming shipment by rail—and at less cost per ton-mile.

Meeting Site Changed

SACRAMENTO, CAL.—The site of the annual meeting of the Agricultural Aircraft Assn. Jan. 31-Feb. 1-2 has been changed to the Californian Hotel, Fresno. It previously had been announced that the meeting would be at the Senator Hotel in Sacramento.

Canadian Agriculture's Economic Outlook Good for 1957, Conference Is Informed

OTTAWA, ONTARIO, CANADA—Economic conditions in Canada's agricultural picture for 1957 appear to be favorable, according to a report presented recently by the federal agricultural department to the federal-provincial agricultural conference. A continuing firm demand in export markets for most agricultural products was forecast.

On the basis of information available to November 1, the report estimated that farm cash income from the sale of farm products in 1957 will be maintained at approximately the 1956 level.

It was noted, however, that the level of cash income next year will depend not so much on 1957 crops as on the volume of exports and the consequent availability of elevator space for 1956 grain currently stored on farms. The report indicated that any large increase in crops might mean much of the increase would have to be held on farms.

"Income in kind is not likely to vary much from the 1956 level," the report adds. "Total farm operating expenses and depreciation charges may not differ too significantly from the estimates for 1956."

The fall moisture which fell in western Canada during the months of August, September and October, 1956, was greater than that which fell during the same period in 1955, although figures for Saskatchewan were again below normal, says a report by the Searle Grain Co., dated Dec. 5, 1956.

As at Nov. 1, the fall moisture figure on stubble land was 85.1% of normal for the three prairie provinces, as against 66.1% of normal last year.

On summerfallowed land the accumulated moisture reserves represent the 1955 fall moisture plus rainfall which fell during the 1956 growing season plus the rains of 1956. These figures in percent of normal, with the corresponding figures for last year in parentheses, are as follows:

	Moisture Reserves Summerfallowed Land % of normal
Alberta	103 (115)
Saskatchewan	81 (125)
Manitoba	103 (117)
Three provinces weighted	89.4 (118.6)

The overall situation, combining the above figures for both stubble and summerfallow, gives the 1956 situation in the three prairie provinces as 87.3% of normal, compared with 92.4% of normal in 1955.

The greater part of the wheat to be seeded this coming spring will be sown on summerfallowed land; and the greater part of the oats, barley,

rye and flax will be sown on stubble land. On the basis of the present reserves alone, the moisture situation is not quite so favorable for crops to be sown on summerfallowed land as it was in the previous year although it may be considered satisfactory in Alberta and Manitoba. Generally speaking, crops to be sown on stubble land will be favored by more moisture than in the previous year.

In their annual report to delegates, the board of directors of the Alberta Wheat Pool viewed the surplus disposal measures of the United States with grave concern, declaring: "It will be necessary for Canada to explore every possible means of sales promotion if markets are to be preserved and expanded." Continuation of the federal government's policy of extending short-term credits to buyers of Canadian wheat was urged.

California Distribution Firm Incorporates

SACRAMENTO—Articles of incorporation for Roy Riegels Chemicals of Woodland, Cal., have been filed in the Yolo County clerk's office. Directors of the concern are Roy M. and Barbara Riegels of Woodland, and John H. and Patricia C. Taylor and Rudolph Schachtli, all of Sacramento. The firm is engaged in the sale and distribution of farm chemicals and fertilizers, seeds and agricultural supplies. It is authorized to issue 200 shares of stock.

ONION MARKETING

PORTLAND, ORE.—A proposed marketing agreement and order for onions grown in Oregon's Malheur County and southwestern Idaho was recently recommended by the U.S. Department of Agriculture, according to Robert H. Eaton, in charge of northwest USDA fruit and vegetable division marketing office. Growers were given an opportunity to vote during the period Dec. 10 to 17 in a referendum to determine whether they favor the marketing agreement and order.

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WORLD REPORT

By **GEORGE E. SWARBRECK**
CROPLIFE Canadian and Overseas Editor

Spanish production of fertilizers for the 1954-55 fiscal year increased approximately 12% over the preceding year's figures, totaling 144,000 metric tons N, 235,000 tons P_2O_5 and 58,000 tons K_2O . In a recent speech the Minister of Commerce stated that the output of nitrogenous fertilizers was 220,000 tons in 1955. However, in the nitrogenous group only the production of ammonium sulfate is reported, with no statistics available for ammonium nitrate or calcium cyanamide.

Spain also produces potash and important quantities of superphosphate, largely from imported materials. Production of phosphatic fertilizers totaled 1,456,000 tons in 1955. Imports of phosphate rock in the fertilizer year July, 1954-June, 1955, amounted to 698,833 tons, mostly from North America, French Morocco being the largest supplier.

The output of potassic fertilizers was 190,940 tons K_2O in 1955. Spain is an important exporter of potash, with shipments amounting to 131,360 tons (K_2O) in 1955. These went principally to Japan, U.K., U.S., Norway and Belgium.

Although Spanish production of nitrogenous materials has climbed considerably in recent years, Spain still must import approximately 70% of its requirements. The potential market for U.S. nitrogenous fertilizers, especially ammonium sulfate, has been estimated at 100,000 to 200,000 tons annually, depending on how competitive prices are with those of European producers.

The market for U.S. phosphate rock depends largely upon prices of the North American material, which is being imported under a bilateral arrangement with France.

N Output Announced

In their annual report on the nitrogen industry Messrs. Aikman (London) Ltd., estimate total production capacity for 1956-57 at 9,160,000 tons with consumption at 7,990,000 tons. They point out, however, that the world situation today is so chaotic that a considerable decrease in European production, over the estimate, might well take place owing to fuel difficulties and in consumption owing to the shortage of shipping, as a substantial portion of the European production has to be exported.

Under any circumstances, the report goes on, it is clear that stocks at June 30, 1957, will be much higher than at June 30, 1956, unless production is radically reduced in the U.S. compared with present estimates.

If present building plans are carried out the capacity available for 1957-58 will reach about 10,250,000 tons so, in order to avoid unwieldy stocks at June 30, 1958, production will have to be cut down substantially during the next two years.

Better Prices in 1957?

The decline in Canadian agricultural prices which has characterized the past few years, is expected to level off in 1957, according to a report assessing the agricultural trade situation in Canada for the next 12 months.

The Federal-Provincial agricultural conference held recently at Ottawa forecast the current high level of economic activity in the industrialized countries would continue well into 1957. Effects of anti-inflationary measures taken by many countries would be felt which would ease the strain on the scarce resources and bring the world economy into better balance.

Demand is expected to remain strong throughout most countries of the world, which would keep production and investment at a high level. This should have a supporting influ-

ence on the demand for agricultural products, it was predicted.

Canada's total commodity exports for the period January to September, 1956, were valued at \$3,600 million as against \$3,200 million in the same period last year. Agricultural exports accounted for \$897 million of this total in 1956 compared with \$737 million in the first nine months of 1955.

Total imports for this period were \$4,200 million as against \$3.4 billion in the same period last year.

As of September, 1956, Canada's trade deficit had reached \$991 million. A main contributing factor has been the heavy imports of capital equipment which are being employed in the further development of natural resources and in the expansion and diversification of secondary industry. Much of this development should lead to an expansion of Canadian exports, it was predicted in the report.

Soil Management Tested

Three types of soil management are under experimentation in plots at Haughley, England.

The first farm is a 32-acre unit having no animals and only inorganic fertilizers are used, supplemented with green manuring. Two other plots are 75-acre units following an eight-course rotation. One is worked as an organic farm with composting as a mainstay of fertility, and the other is operated on more ordinary mixed lines.

It has not yet been possible to make any comparative assessment in scientific terms of any variations in soil structure which could be attributed to the differing methods of management, but according to reports

carried in the London "Times," superficial observation over the past five years has suggested that the soil on the stockless fields is losing structure more than that of the other experimental plots.

Pest Control in Canada

Sales of pest control products in Canada totaled \$22,853,337 in 1955, according to a recent report issued by the Dominion Bureau of Statistics. This figure marks an increase of 18% over 1954, the report states.

Over half of the increased sales were of products used in treating livestock and poultry, which advanced 75% to nearly \$4.8 million. The largest segment of the pest-control products is the group known as agricultural dusts and sprays, in which 1955 sales of \$7,834,000 represented an increase of 6% over sales of the preceding year.

American Potash Plant Sets Safety Record

LOS ANGELES—The Los Angeles plant of American Potash & Chemical Corp. recently completed three years without a lost-time accident, the longest no-accident record ever set by one of the company's facilities.

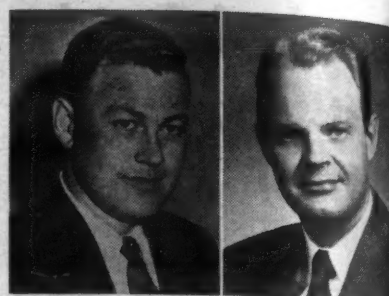
To commemorate the event, the company held a dinner party which was attended by approximately 60 employees of the AP&CC Los Angeles plant at which a plaque was presented to participating personnel by Russell Sunderlin, plant manager of the facility.

Forrest E. Branch, AP&CC director of administrative services, principal speaker at the dinner, lauded employees for showing "a sense of responsibility to both their employer and their families" in adhering to safety rules that permitted the three-year record to be achieved.

Other speakers who commended plant personnel were Robert B. Coons, AP&CC vice president, administration; Russell S. Sunderlin, manager of the plant, and Jerry J. Barry, personnel and office manager at the AP&CC Los Angeles plant.

PHOSPHATE SHIPMENTS

KNOXVILLE—The first all-water shipments of phosphate pebble from Florida to TVA's chemical plant have been received at the Wilson Dam, Ala. fertilizer works. Two bargeloads of the Florida phosphate—approximately 2,500 tons—were loaded on ocean-going barges at Tampa, and transferred to river barges at Port Sulphur, near New Orleans, for shipment up the Mississippi, Ohio and Tennessee Rivers.



Robert L. Knox



Herman R. Brown

Hough Appoints Two New Assistant Sales Managers

LIBERTVILLE, ILL.—G. A. Tamblyn, sales manager of the Frank G. Hough Co., Libertyville, Ill., has announced the appointment of Robert L. Knox and Herman R. Brown as assistant sales managers.

"The increased demand for 'Pay-loader' equipment which has necessitated our current plant expansion has also made it essential for us to reorganize and broaden our sales department," said Mr. Tamblyn.

Mr. Knox, who has been a district sales representative for the Frank G. Hough Co., will take charge of distributor sales and the contacts with field personnel.

Mr. Brown, formerly manager of the order and distribution section of the sales department, will assume direction of manufacturers sales including export, government and supplemental equipment as well as scheduling operations.

The 1956 sales volume of the Frank G. Hough Co., whose fiscal year ended Oct. 31, established a new high. According to G. A. Gilbertson, president of the company, the additional plant facilities will enable the company to reduce the backlog of orders and improve the delivery position during the coming year.

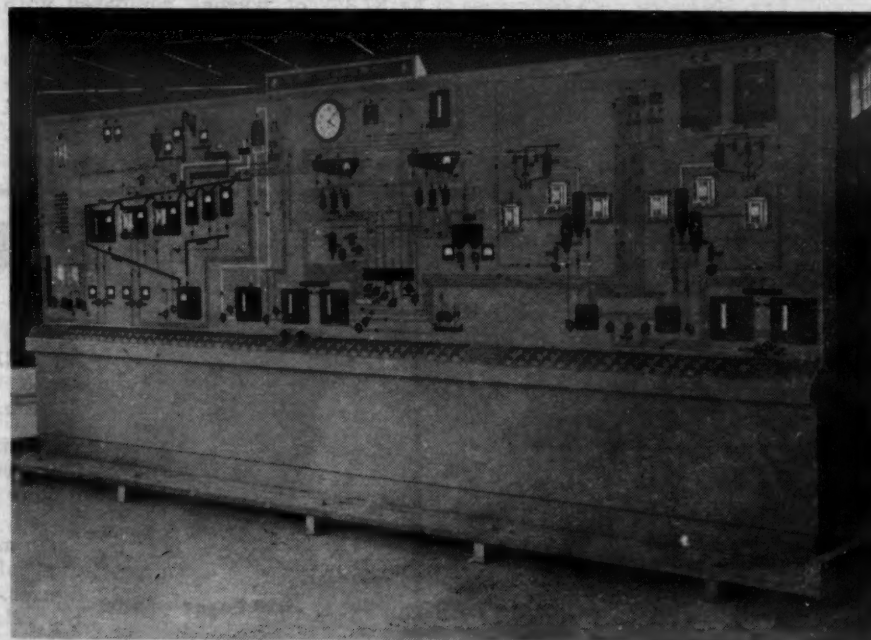
Olin Mathieson Gives Phosphate Grant to Oklahoma A&M

STILLWATER, OKLA.—The Olin Mathieson Chemical Corp., Little Rock, Ark., has provided a \$10,000 grant to the Oklahoma A&M College experiment station, Stillwater, to support a five-year research project on the relative effectiveness of ammonium phosphate for establishing and maintaining pastures, according to Dr. L. E. Hawkins, experiment station director.

The grant will make \$2,000 a year available for the research work at Coalgate over a five-year period starting Jan. 1. Dr. J. Q. Lynd, associate professor of agronomy, will be in charge of the work, with assistance from Norman H. Welch and Norman L. Nossaman, graduate research assistants.

The research will deal with determining the effectiveness of phosphoric fertilizer at different moisture levels. "An important problem in Oklahoma is the fall establishment of small grains and forages during dry weather," Dr. Lynd points out. "Water soluble phosphates offer possibilities for improved seedling vigor and root growth. When crops are established with low soil moisture, these fertilizers may give them a much better chance to withstand the extremes in climate and soil conditions. Information from this research will be applicable to farming operations throughout Oklahoma."

Greenhouse, field plot and laboratory experiments will be used, as well as actual grazing experiments. The experimental pasture work will be done mainly on the 300-acre "west project" of the Southeast Oklahoma pasture fertility station at Coalgate. A 40-acre improved pasture area established in 1954 yielded almost three tons of high protein hay per acre in 1955 and has carried 64 steers this fall and winter, Dr. Lynd points out in citing the possibilities of studied pasture management.



FERTILIZER PLANT INSTRUMENTATION—Shown above is the instrument control panel to be installed in the Dorr-Oliver designed phosphoric acid plant now under construction for a Norwegian fertilizer manufacturer. Each equipment unit in plant flowsheet is represented on panel by silhouette cut to both scale and shape of operating unit. Wherever possible, instruments indicating unit operating conditions have been located within corresponding equipment silhouette. Process flowlines between units are also shown on board and all labels are in Norwegian. The panel, 18 feet long and 7 feet high, was built by Regent Controls, Inc., Stamford, Conn.

California Devotes Increasing Acreage to Feed Grain Crops

DAVIS, CAL.—More animal and poultry feed grains are being grown in California on land formerly planted to cotton, wheat and rice, which have been under acreage allotments for the past few years.

Barley, grain sorghums, corn and soybeans are the main crops increasing in acreage on farms formerly concentrating on the acreage allotment crops, reports Dr. Dale G. Smeltzer, assistant professor of agronomy at the University of California, Davis.

For the past two years, acreage of barley has exceeded that for the preceding 10 years by 250,000 acres, Dr. Smeltzer said. Since most of this increase has been on productive lands formerly used for cotton and wheat, the average yield per acre for California has also increased.

Grain sorghums are fast gaining a competitive position on diverted acres, Dr. Smeltzer said. They are especially profitable when used in a double-cropping system following early potatoes, barley, oats or vetch hay.

Corn, while the most important field crop in the U.S., is considered as new to California. Before 1954, about 70,000 acres were grown in California each year, about half harvested for grain and the other half for forage. The average yield of grain corn was about 2,300 lb. per acre. The total crop was only about 10% of the shelled corn fed in California.

During the past three years corn acreage has risen to 216,000 acres in California, primarily in the southern San Joaquin Valley, the Sacramento-San Joaquin Delta area and the Sacramento Valley. Corn is also growing in popularity in coastal valleys and in desert areas.

Soybeans are now being planted on limited acreage, although attempts have been made for more than 35 years to establish this crop here. Some 2,000 acres were planted this year in California. An extensive program by the university is now under way to explore varieties and production and harvesting practices for this crop, Dr. Smeltzer stated.

Michigan Chemical Adds to Research Staff

ST. LOUIS, MICH. — Michigan Chemical Corp., St. Louis, Mich., has expanded its technical staff by the addition of several research chemists, Dr. Dwight Williams, company director of research, has announced.

Dr. C. G. Shultz, recently associate professor of chemistry at Eastern New Mexico University, Portales, is now engaged in research in rare earths and similar chemicals in connection with the company's development of this field. Carl W. Clemons recently joined Michigan's engineering research staff and is assigned to problems concerning the manufacture of new products. John R. Morton, research chemist, is concentrating on the general inorganic problems. John H. Todd, research chemist, is assigned to work in the company's organic laboratories.

Monsanto Announces Research Appointments

ST. LOUIS — Dr. Ferdinand C. Meyer of St. Louis has been appointed an associate director of research in the central research department of Monsanto Chemical Co.'s research and engineering division. Dr. Meyer, an assistant director of research for Monsanto's organic chemicals division, will assume his new duties at Dayton, Ohio, Jan. 1, 1957.

Dr. Tracy M. Patrick Jr. of St. Louis, a group leader in the organic chemicals division's research department, has been appointed an assistant director of research effective Jan. 2, 1957.

Gloomicides

Woman, trying on fur coat, to the salesgirl: "I wish it were called something besides broadtail. My husband fancies himself a comedian."

★

A number of show girls were entertaining an isolated army camp. They had been at it all afternoon and were not only tired but very hungry. Finally at the close of their performance the major asked, "Would you girls like to mess with the enlisted men or the officers this evening?"

"Doesn't make any difference," spoke up a blonde, "but we've got to have something to eat first."

★

"Hello, tower—Come in, tower. I can't see through this fog and am running out of gas. Give instructions."

"Tower to pilot—tower to pilot. Repeat after me: 'Our Father, who art in Heaven . . .'"

★

If I were king for one day, I would make every program in radio a giveaway show; when the studios were filled with the people who encourage these atrocities, I would lock the doors. With all of the morons in America trapped, the rest of the population could go about its business.

★

Meeting at a social gathering, a lawyer called a physician friend aside and said, "I hate to come to these things. People are always asking for free advice. Do you have to put up with that too?"

"Why, yes, people are always approaching me for free medical advice," said the doctor. "But I stop them in the midst of reciting their symptoms with a curt arbitrary command—'Disrobe.' After that, I really have no trouble."

★

A pessimist is an optimist who voted for a politician he thought would eliminate government waste.

★

An employer was severely reprimanding a meek employee. "Mr. Jones, I understand you've been going over my head," stated the employer. "Not that I know of, sir," ventured the meek employee.

"Isn't it true that you've been praying for a raise?" asked the employer.

★

"Do you ever have rows with your wife?"

"We used to until we realized I was wrong."

★

Woman: "I'm not prejudiced at all. I'm going with a perfectly open and unbiased mind to listen to what I'm convinced is pure rubbish."

★

After a shipwreck, a doctor, a parson and a lawyer found themselves in a rowing boat without oars. They came in sight of an island, but their only hope of landing was for someone to go over the side through the shark-infested sea and tow the boat to land.

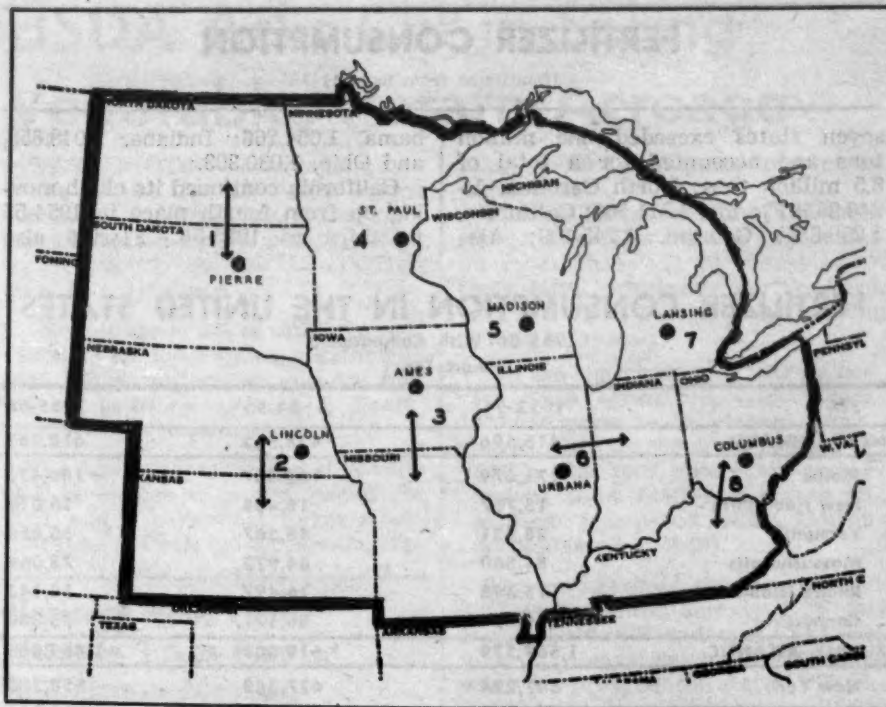
Lots were drawn, and it fell to the lawyer. When he slipped over the side the sharks divided, and made an avenue for him.

"An answer to prayer," said the parson.

"No, no, just professional courtesy," commented the doctor.

★

Sometimes it seems like the cost of making history is more than the darned stuff is worth.



PEST CONTROL REGION—This is the 13-state area comprising the central plant pest control region of the agricultural research service, U.S. Department of Agriculture. Regional headquarters are located at Minneapolis. This region is sub-divided into eight areas directed by area supervisors in the cities shown.

Raymond Bulger Appointed Supervisor Of Central Plant Pest Control Region

MINNEAPOLIS — Raymond O. Bulger, agriculturist with the U.S. Department of Agriculture, St. Paul, has been appointed regional supervisor of the recently designated central plant pest control region which combines all the functions of the plant pest control branch, agricultural research service, USDA.

State-federal cooperative programs, including quarantine enforcement and regulatory activities of barberry eradication, grasshopper control, Japanese beetle control, gypsy moth control and insect surveys are included among pest control activities within this region. Regionalization of plant pest control work will make possible fuller utilization of manpower and equipment and should result in closer coordination of all state-federal pest control activities. Barberry eradication and all other control programs will be strengthened.

The 13 states comprising the central plant pest control region, which coincide geographically with member states of the central plant protection board, are North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan, Ohio and Kentucky. Regional headquarters are located at 35 South Fifth St., Minneapolis.

A full time government employee since 1924, Mr. Bulger served as leader of the barberry eradication project in South Dakota and most

recently as project leader of the cooperative barberry eradication program in a 19-state area. As project leader, he and his assistants pioneered use of various herbicides in the eradication of rust susceptible barberry plants. Substantial portions of the upper Mississippi Valley have been cleared of this threat to the grain industry under his leadership. He holds B.S. and M.S. degrees from South Dakota State College and has taken graduate work in plant pathology and plant breeding at the University of Minnesota.

The staff assistants at regional headquarters include Harold A. Hauke, entomologist, control activities; Leo G. K. Iverson, entomologist, survey programs; and Tom Van Zanden, pathologist, regulatory programs. Willard A. Algren is administrative assistant for the region.

The insect survey program will be continued to provide information on economic insect pests within the region. Program surveys to obtain current information concerning grasshopper, Japanese beetle, and gypsy moth infestations, and detection surveys to intercept pests not presently established in the central region will be made.

The central region is subdivided into eight areas directed by area supervisors: (1) North and South Dakota; (2) Nebraska and Kansas; (3) Iowa and Missouri; (4) Minnesota; (5) Wisconsin; (6) Illinois and Indiana; (7) Michigan; (8) Ohio and Kentucky. Area Supervisors will be located in Pierre, S.D.; Lincoln, Neb.; Ames, Iowa; St. Paul, Minn.; Madison, Wis.; Urbana, Ill.; Lansing, Mich.; and Columbus, Ohio.

Airport Studied

FREMONT, CAL.—The possibility of establishing an airport in Fremont, near Oakland, Cal., for use by crop dusting planes will be studied by a newly created aviation committee of the Fremont Chamber of Commerce. The committee plans to meet with the Civil Aeronautics Administration to discuss the airport which could also be used by private planes and for emergencies. Major Harold Heath, a Marine pilot at Alameda Naval Air Station is chairman of the committee whose members are Roland Lawrence, Barney Smith and Dr. J. B. Trant.

LAND VALUE UP

DOVER, DEL.—Delaware's land value rose 5% during the year ended last June 30.



Raymond O. Bulger

FERTILIZER CONSUMPTION

(Continued from page 1)

seven states exceeded one million tons and accounted for a total of 8.5 million tons: North Carolina, 1,646,965; Florida, 1,311,560; California, 1,259,654; Georgia, 1,245,109; Ala-

bama, 1,054,266; Indiana, 1,048,658, and Ohio, 1,030,303.

California continued its climb moving up from fourth place in 1954-55 to third in 1955-56. Florida also

jumped a notch from third to second replacing Georgia which dropped from second in 1954-55 to fourth in 1955-56.

North Carolina, the perennial leader, retained its number one spot, and other states in the top seven also retained their previous year's ratings.

This report, compiled for the most part from figures supplied by state fertilizer control officials, roughly parallels the more comprehensive official USDA report on fertilizer consumption which is issued annually in the spring for the preceding fiscal year. Figures for 1953-54 and 1954-55 are derived from the USDA report, "Commercial Fertilizers, Consumption in the United States."

Oldbury Expanding Production of Sodium Chlorate

NEW YORK—The Oldbury Division, Hooker Electrochemical Co., Niagara Falls, N.Y., is now expanding its plant near Columbus, Miss., to produce additional sodium chlorate, it was announced recently by Bjarne Klaussen, president of Hooker, into which Oldbury Electro-Chemical Co. was merged on Nov. 30, 1956. The enlarged plant will be completed in early 1958 and will bring the total investment value there to approximately \$6 million, Mr. Klaussen said.

This is the firm's second expansion since the plant went into production in 1954 with an initial capacity of 12,000 tons per year. About 5,000 tons was added to capacity late this summer, and an additional 5,000 tons per year will now be made available, raising the total annual capacity to 22,000 tons.

Alfalfa Aphid Earns Title of "Most Studied" Insect in California

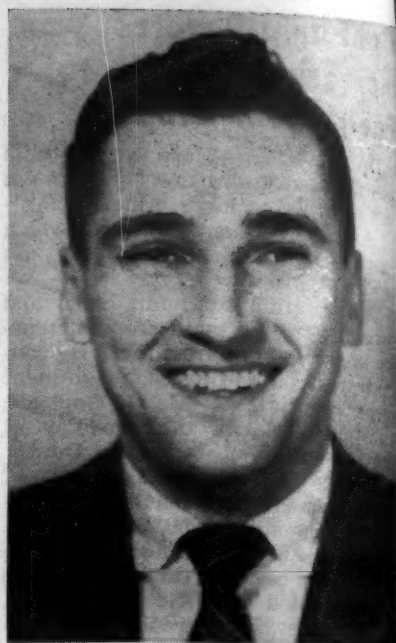
BERKELEY, CAL.—The spotted alfalfa aphid is the most troublesome of insect enemies of California agriculture, if the number of studies made on the control of this pest by the University of California during 1956 is a measurement.

Of some 24 reports on insect pest control as reported by the Division of Agricultural Science during the year now ending, six, or 25%, dealt with various aspects of the alfalfa aphid, and three more studies dealt with its cousins, affecting such crops as citrus fruits, walnuts, and apples.

The two crops, in addition to alfalfa, which received the greatest amount of attention by University researchers were citrus fruits and walnuts. Although only two studies dealt directly with insects affecting citrus, these products were the subjects of at least ten other studies on such items as fertilizers, soils, damage from chemical sprays, seedlings, and others. Five additional studies related directly to oranges, and two more to lemons.

Of ten studies on walnuts all but one concerned insect damage and control, and the tenth dealt with late harvest frost damage. The calico scale, the codling moth, the filbert-worm, frosted scale, navel orange-worm on walnuts, spider mites, blight, and husk fly all were reported by the Division of Agricultural Sciences, in addition to the aphid study.

Other types of crops benefited by these researchers included almonds, on copper deficiency; apples, as affected by the woolly aphid; apricots and growth regulators; avocados; beans, three separate studies; DDT residues on corn; date palm seedlings and nutritional needs; lettuce, and fertilizer injuries; three studies on insect damage to peaches; two studies on insect damage to pears; rice; spinach; two insect studies on strawberries; five studies on tomatoes,



C. Frank Walter

NEW SALES REPRESENTATIVE—Grand River Chemical Div. of Deere & Co. has announced the appointment of C. Frank Walter as sales representative in Illinois and Indiana. He is a graduate of Iowa State College and for the past three years, has served as sales representative for the plant food division of Swift & Co. His new work will include the sale of Deere's urea nitrogen fertilizer (Vitrea), nitrogen solutions, anhydrous ammonia and urea feed compound.

Delaware Tomato Yield Sets Record

DOVER, DEL.—The tomato crop in Delaware during the past summer had the highest yield ever recorded in this state for that crop, according to a report by Ralph W. Wine, director of the Bureau of Markets for the State Board of Agriculture.

In his report Mr. Wine states that commercial canneries reported an average yield of 13.6 tons per acre on all of the acreage they had planted for serving their plants.

Mr. Wine adds, however, that in some areas, particularly northeast of Dover, there were yields on a few farms that averaged 25 tons to the acre or slightly better.

Growers Approve Marketing Quotas

WASHINGTON—Marketing quotas for upland and extra long staple cotton, peanuts and rice were approved in recent grower referendums. Cotton and rice quotas were approved for 1957 and peanut growers voted to continue quotas during 1957, 1958 and 1959.

Soil Bank Payment Rates Announced

WASHINGTON—Ezra Taft Benson, secretary of agriculture, has announced national average dollars-and-cents payment rates per acre which will apply in administration of the 1957 acreage reserve programs for five basic crops. As announced on Nov. 30, there are no plans to include peanuts or extra long staple cotton in the soil bank acreage reserve next year.

The national average payment rates per acre are:

Wheat \$20.04, upland cotton \$54.15, corn \$42.66, rice \$63.18, flue-cured tobacco (11-14) \$255.42, burley (31) \$295.74, Maryland (32) \$147.73, fire-cured (21-23) \$172.90, dark air-cured (35-36) \$175.20, Virginia sun-cured (37) \$138.12, cigar filler (42-44) \$145.35, cigar binder (51) \$336.68, cigar binder (52) \$345.42, cigar binder (54) \$125.60, and cigar binder (55) \$166.98.

FERTILIZER CONSUMPTION IN THE UNITED STATES

1955-56 With Comparisons
(Short Tons)

STATE	1953-54 ¹	1954-55 ¹	1955-56 ²
NEW ENGLAND	415,596	438,562	410,151
Maine	171,679	182,207	180,473
New Hampshire	15,767	18,408	16,015
Vermont	38,331	48,307	50,856
Massachusetts	84,560	84,972	73,664
Rhode Island	15,398	16,497	14,143
Connecticut	89,861	88,171	75,000 ³
MIDDLE ATLANTIC	1,567,579	1,619,009	1,469,536
New York	607,224	627,382	558,370 ³
New Jersey	289,508	285,184	250,054
Pennsylvania	670,847	706,443	661,112
EAST NORTH CENTRAL	4,202,676	4,107,640	3,897,121
Ohio	1,083,775	1,077,977	1,030,303
Indiana	1,153,229	1,133,883	1,048,658
Illinois	941,506	838,863	784,618
Michigan	596,034	634,976	626,529
Wisconsin	428,132	421,941	407,013
WEST NORTH CENTRAL	2,022,746	2,051,404	1,790,735
Minnesota	317,331	369,668	360,263
Iowa	628,663	568,314	433,931
Missouri	597,841	577,518	574,273
North Dakota	47,617	62,867	68,970
South Dakota	29,846	37,841	25,594
Nebraska	193,577	204,354	125,995
Kansas	207,871	230,842	201,709
SOUTH ATLANTIC	6,538,049	6,481,186	6,290,221
Delaware	94,655	95,462	82,097 ³
Maryland	310,581	315,563	296,629 ³
D. C.	2,695	2,793	2,868 ³
Virginia	779,173	793,395	761,215
West Virginia	76,685	81,568	84,660
North Carolina	1,822,442	1,799,541	1,646,965
South Carolina	936,865	924,829	859,118
Georgia	1,346,831	1,256,662	1,245,109
Florida	1,168,122	1,211,373	1,311,560
SOUTH CENTRAL	4,356,795	4,271,922	4,184,429
Kentucky	573,344	515,569	514,852
Tennessee	523,078	530,895	517,530
Alabama	1,179,030	1,156,530	1,054,266
Mississippi	727,920	718,367	750,305
Arkansas	368,091	332,513	358,800
Louisiana	314,424	318,802	296,655
Oklahoma	130,784	121,499	131,931
Texas	540,124	577,747	560,090
WESTERN	1,731,493	1,933,140	1,938,071
Montana	28,418	23,261	30,000 ³
Idaho	84,456	102,058	80,608
Wyoming	10,151	10,364	15,276 ³
Colorado	46,275	48,121	57,196
New Mexico	22,347	32,584	27,262
Arizona	134,320	152,279	134,086
Utah	28,104	27,612	23,339 ³
Nevada	3,414	1,804	3,096
Washington	154,052	184,502	153,492
Oregon	132,422	154,908	154,062
California	1,087,534	1,195,647	1,259,654 ⁴
UNITED STATES	20,834,934	20,902,863	19,980,264

¹ Source: "Commercial Fertilizers, Consumption in the United States" 1953-54 and 1954-55 by Walter Scholl, Hilda M. Wallace and Esther I. Fox, Fertilizer and Agricultural Lime Section, Soil and Water Conservation Research Branch, Agricultural Research Service, USDA.

² Preliminary, subject to revision.

³ Estimated; margin of error may be large.

⁴ Includes an estimated 225,000 tons of manures not reported by State.

1955-56 Fertilizer Consumption in the U.S. with Comparisons¹

Region—	1954-55 ²	1955-56 ³	Percent Change
New England	438,562	410,151	— 6.48
Middle Atlantic	1,619,009	1,469,536	— 9.23
East North Central	4,107,640	3,897,121	— 5.13
West North Central	2,051,404	1,790,735	—12.71
South Atlantic	6,481,186	6,290,221	— 2.95
South Central	4,271,922	4,184,429	— 2.05
Western	1,933,140	1,938,071	+ .26
U.S.	20,902,863	19,980,264	— 4.41

¹ After deleting limestone, phosphate rock, colloidal phosphate, secondary and trace elements, gypsum, sulfur and other soil amendments.

² Source: "Commercial Fertilizers, Consumption in the U.S., 1954-55," USDA.

³ Prepared by NPI. Preliminary, subject to revision.

SYSTEMIC INSECTICIDES

(Continued from page 1)

their cooperative efforts in this research.

Armed with an effective new systemic chemical, in addition to one that proved successful in field trials last year, USDA and state entomologists teamed with industry to determine the most effective and economical means of applying these insecticides.

The chemicals used effectively in experiments this year were "Thimet," formerly known as "Cyanamid 3911," which was tested extensively in 1955, and a new phosphorus compound, "Bayer 19639," which proved equally successful this year.

The most effective method of application, among 4 methods tried experimentally, continued to be the treatment of cottonseed, before planting, with carbon dust mixed with 50% of insecticide, Mr. Ewing said. The other methods, none of which had any advantage over the seed treatment, were: application of systemics to cotton-plant foliage by spraying; soaking, spraying, and pelleting the seed; and applying the chemicals in dust, spray, or granules to the soil as a side dressing at planting time or later.

Used for seed treatment, both "Thimet" and "Bayer 19639" gave generally excellent control of thrips, aphids, and spider mites where these pests were a problem on seedling cotton. Dosages of 1 lb. an acre proved effective for 4 to 6 weeks after plant emergence. The effective period was reduced by 1 to 2 weeks when only one-half pound of the chemicals was used per acre.

Striking results were obtained in aphid control. An unusually heavy early-season infestation of these pests in Texas cotton-producing areas provided excellent test conditions. In 10 large-scale experiments, in which seed treatment approximated 1 pound of "Thimet" per acre, the treated cotton plants averaged only 0.3 aphid per square inch of leaf surface 6 weeks after planting, compared to 14 aphids per square inch on untreated plants—a ratio of 1 to 47. Control continued for several weeks longer where infestations persisted.

Two months after planting, treated plants in the most heavily infested field were about twice as tall as untreated plants. By 12 weeks after planting, the treated cotton plants averaged 19 forms (squares, blooms, and bolls) per foot of row, against an average of 9 per foot on the untreated plants. At the same time, treated plants averaged 6,000 blooms per acre, compared to 1,600 blooms per acre for untreated plants. Yield measurements showed that the treated plants produced 39% more cotton than the untreated.

Effectiveness of the two systemic chemicals against aphids was further demonstrated in another experiment, conducted in South Carolina, Mr. Ewing reported. In this test a deliberate attempt was made to build up the aphid population by the use of calcium arsenate, commonly used for boll-weevil control. Calcium arsenate kills off predators and parasites that normally attack aphids but does not affect the aphids.

Seed treated with each of the chemicals was planted in April, along with a control plot of untreated seed. Five applications of calcium arsenate were made between July 20 and August 3 to increase the aphid population. By August 10, there was a heavy infestation of aphids on the untreated plot, but not on the systemic-treated plots. An average of 100 aphids per square inch of leaf surface was found on the untreated cotton, and less than 1 aphid per square inch on the treated plants.

This experiment was the first in which use of systemics was linked with application of calcium arsenate for boll-weevil control. The entomolo-

gists emphasize that further tests are needed across the cotton belt to determine whether similar results can be obtained elsewhere.

Beltwide experimental results this year were not markedly different from those obtained in 1955 on weevils, cutworms, cotton flea hoppers, flea beetles, leaf miners, cotton leaf perforators, false wireworm adults and brown cotton leafworms. The systemics were effective against light, but not heavy, infestations of cutworms. Control of overwintered weevils was not considered satisfactory—the insecticides were not residual enough to kill late-emerging weevils. Control of other insects in this group ranged from fair to good for a limited time.

Effect of the systemics on cotton plants varied considerably. Seed germination was retarded in many but not all cases. In a few instances, replanting of the seed-treated plots was necessary. But in most of the tests there was no difference in cotton stands on the treated and untreated plots after the usual chopping or thinning.

Toxic effect of the systemics on newly emerged plants was common. It was indicated usually by brown specks on the cotyledons. However, this effect was rarely carried to the true leaves. Early growth, and fruiting were inhibited or delayed in some cases but greatly accelerated in others.

Yield results were not a primary aim of the 1956 experiments, but those obtained revealed little difference between treated and untreated cotton. Lint tests, conducted by USDA's agricultural marketing service, showed no adverse effect on grade or staple as a result of systemic treatment.

Custom treatment of seed by persons trained to handle the toxic chemicals proved satisfactory in 1956 and is recommended for 1957 as the safest and best method of mixing and distributing systemic insecticides for use by either researchers or farmers.

J. B. Skaptason Joins Spencer Chemical Co.

KANSAS CITY—Spencer Chemical Co. has announced the employment of Dr. Joseph B. Skaptason as manager agricultural product development with offices in Kansas City. In this capacity he will manage the field development activities of new agricultural chemicals resulting from Spencer's research program and assist in the development of the company's long range plans in agricultural chemicals. Dr. Skaptason was formerly director of new product development in the agricultural division of Pittsburgh Coke & Chemical Co.

A native of Winnipeg, Manitoba, Canada, he was graduated from the University of Manitoba in 1933 with a B.S. degree in agriculture; and in 1935 received an M.S. degree in plant science from the University of Alberta, in Canada. In 1940, he received a Ph.D. in plant pathology from Cornell University, Ithaca, N.Y.

From 1941 to 1945 he was employed by Naugatuck Chemical Division of U.S. Rubber Co., and later served as assistant sales manager for John Powell and Co., Inc., in New York. Since 1948, he was associated with the Pittsburgh Coke & Chemical Co.'s agricultural chemical activities.

Dr. Skaptason served as chief of the agricultural chemical section of the Office of Price Stabilization for a six month period in 1952. He is a member of Sigma Xi, honorary scientific fraternity, the American Pathological Society, Entomological Society of America and American Association for the Advancement of Science.

USDA Asks Cut in Spring Vegetable, Potato Acreage

WASHINGTON — Acreage-marketing guides for 1957-crop spring vegetables for fresh use, spring melons and spring season potatoes were issued recently by the U.S. Department of Agriculture.

Reductions of 2% in total planted acreage for fresh spring vegetables, 5% for spring melons and 5% for spring potatoes—from 1956 plantings—were recommended.

The department said that if production is in line with the guides for 1957, and if marketings follow a normal time pattern for the season, supplies should be adequate to meet all requirements.

National Plant Food Institute Takes Part In Chicago Meeting

WASHINGTON — The National Plant Food Institute played a prominent role in a series of important agricultural meetings held in Chicago, Nov. 23-29.

C. T. Prindeville, president of the institute, gave a welcome talk to the guests at the institute-sponsored annual banquet for members and associate members of the National Association of Television and Radio Farm Directors, Nov. 25. Approximately 250 television and radio farm directors and associates from all parts of the U.S. attended the banquet which culminated a 3-day meeting of the group.

Louis H. Wilson, secretary and director of information for the institute, was elected to a 3-man associate member advisory committee to work with officers and the executive committee of NATRFD. Mr. Wilson also will head the steering committee for the NATRFD 1957 spring meeting to be held in Washington, D.C.

Delbert L. Rucker, director of publications for the institute, served on a committee to select a revised emblem for NATRFD.

Mr. Wilson was elected president of the Agricultural Relations Council at its annual meeting Nov. 29. This group is an organization of key professional agricultural public relations personnel, of which Mr. Rucker also is a member.

Mr. Rucker supervised an institute-sponsored exhibit of the organization's activities at the annual meeting of the American Society of Farm Managers and Rural Appraisers Nov. 25-27.

Ralph Sandlin Yohe, associate editor of the *Prairie Farmer*, Chicago, and Frederic B. Knoop, executive editor of the *Farm Quarterly*, Cincinnati, received plaques as winners in the institute-sponsored "Soil Builders Award for Editors" contest. The presentations were made by Mr. Wilson at the annual winter meeting of the American Agricultural Editors' Assn.

Statewide Weed Group Formed in California

SACRAMENTO — Coordinated action to combat the weed problem in California has been launched by the State Chamber of Commerce with establishment of a statewide committee under the chairmanship of J. Earl Coke, vice president, Bank of America.

The initial meeting of the committee was marked by a message of greeting from Gov. Goodwin J. Knight which declared:

"At a conservative estimate, weeds drain over \$200,000,000 yearly from the productive economy of the state."

Two long-term objectives were designated at the initial committee meeting: to coordinate existing weed control programs in California; to cooperate with other organizations in launching a statewide educational program aimed at weed eradication.

plies should be adequate to meet all requirements.

The guides cover the 18 major spring vegetables and two spring melon crops that will be marketed in fresh form, principally during April, May and June, 1957, and 1957 spring season potatoes.

In the aggregate, the 1957 guides for fresh spring vegetables total 414,040 acres to be planted (compared with 422,380 acres planted in 1956). The 1957 guides for spring melons total 148,100 acres to be planted (compared with 155,900 acres planted in 1956).

The spring potato acreage guide for 1957 is a planted acreage 10% less than in 1956 in Florida and California and an acreage equal to 1956 in the other 11 spring season states. The national total guide amounts to 181,980 acres to be planted (compared to 190,900 acres planted in 1956). With average yields, the probable production from the guide acreages would be 26.3 million hundredweight, USDA said.

The guides are part of an annual series. Guides for winter season fresh vegetables and winter season potatoes were announced in August, 1956. Guides for summer, fall, and processing vegetables, sweetpotatoes and summer and fall season potatoes will be issued in January, 1957. Issued seasonally prior to planting time, the guides are designed to assist vegetable growers in planning production. Action by growers on the department's recommended acreages is voluntary.

Percentage Change in 1957 Planted Acreage Compared With 1956

Commodity	%
Spring vegetable—	
Beans, Lima	...
Beans, snap	...
Early spring	+5
Mid spring	+5
Late spring	+5
Beets	...
Broccoli	...
Early spring	-10
Late spring	...
Cabbage	...
Early spring	-5
Late spring	...
Carrots	...
Cauliflower	...
Early spring	-5
Late spring	-20
Celery	...
Sweet corn	...
Early spring	...
Late spring	+10
Cucumbers	...
Early spring	...
Late spring	...
Eggplant	...
Lettuce	...
Early spring	↑
Late spring	...
Onions	...
Early spring	↓
Late spring	+10
Peas, green	...
Early spring	...
Late spring	...
Peppers, green	+5
Shallots	-10
Spinach	...
Tomatoes	...
Early spring	↓
Late spring	+15
Spring melons	...
Cantaloups	-5
Watermelons	-5

*Celery: Planted acreage 5% less than in 1956 in Florida, California acreage equal to 1956.

†Lettuce, early spring: Planted acreage 25% below 1956 in Arizona, 20% above 1956 in California and equal to 1956 in all other states.

‡Onions, early spring: Planted acreage 50% below 1956 in Raymondville-Lower Valley area, 25% below 1956 in the Coastal Bend area, and equal in 1956 in all other areas.

§Tomatoes, early spring: Planted acreage 5% less than in 1956 in Florida and equal to 1956 in all other states.

...No change.

1957 Acreage-Marketing Guides—Early and Late Spring Potatoes

Group and state	1957 Acreage guide acres	% Guide is of 1956 planted acreage
Early spring:		
Florida	23,580	90
Texas	400	100
Total	23,980	90
Late spring:		
North Carolina	20,500	100
South Carolina	8,400	100
Georgia	2,200	100
Alabama	24,200	100
Mississippi	9,500	100
Arkansas	10,100	100
Louisiana	8,300	100
Oklahoma	4,700	100
Texas	9,100	100
Arizona	4,300	100
California	56,700	90
Total	158,000	96
Total spring	181,980	95

Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Northeastern states.

34 Years of Application Vindicates Pesticide Use

Loud clamors from bird lovers and other people interested in the preservation of wildlife in general, have been heard from time to time against the application of pesticides to control various pests. The argument put forth by these folks has been that prolonged applications of insecticides in forests and similar areas may eventually kill off all of the birds and animals which inhabit such places.

In view of this, it is interesting and significant to note a recent report from the Connecticut Agricultural Experiment Station, which states that "pesticides are essential at the present time to produce the quantity and quality of food and fiber our people want." It bases this statement on the experience of some 34 years of applying pesticides to wooded areas.

That the results of this activity has brought about "no particular disturbance of wildlife," should be reassuring to many who may have wondered about the possible ill-effects of applying toxicants over a wide area.

Dr. Neely Turner, entomologist at the Connecticut station, assured the Audubon Society in a recent talk before that group in New York, that there is "little conflict of interest between users of pesticides on cultivated agricultural crops and persons particularly concerned with the protection of wildlife."

It was pointed out that during the 34 years that the station engaged in pest control activities to control mosquitoes and insects attacking forest trees, these projects brought about the application of tons of insecticides on thousands of acres. In such attempts to restrict the spread of gypsy moth, Dr. Turner said, no disturbance of wildlife was recorded.

Of course, the station took many precautions in proceeding with this work. Thorough cooperation has been carried out with the state fish and game commission, and Connecticut law now regulates application of pesticides. The state department of health is authorized to issue permits for spraying from aircraft with the approval of the state fish and game commissioner as to areas, and the experiment station as to materials. The state aeronautics commissioner also comes into the picture with authorization for low-flying. When all these hurdles are cleared, the requested spray projects are given the green light.

It is encouraging to note that these facts tend to minimize the fears of nature-lovers who regard pesticides as an enemy of wildlife and game. At the same time, it is noteworthy that these operations in Connecticut have been executed with a careful approach and an eye to safety.

Once more, it illustrates the fact that properly used, pesticides are friends, not foes, of birds and animals of the forest. If gypsy moth and other tree destroyers were allowed to operate unhampered, there might soon be insufficient trees and other cover for the birds and game to inhabit.

This same thought was pursued in a number of papers presented at the recent North Central Weed Control Conference in Chicago. This group discussed the subject of wildlife habitat management with chemical products, and it was shown rather conclusively, we think, that these same tools which make farming more effective and profitable can also be used in some situations, to encourage development of wildlife populations and make them more numerous and thrifty.

Of course, these papers recognized many factors as contributing to the welfare of

wildlife, but the fact that chemicals were included among the beneficial agents hints not only at a possible future market, but more importantly, the association of chemicals with the welfare, rather than the destruction of woodland creatures.

As mentioned above, agricultural chemicals as a group have often been accused of wanton injury to nature and her beauty. Insecticides have been blamed for deaths of game animals and birds, as well as songbirds. Herbicides, likewise, have been condemned for indiscriminate destruction of food and cover for the denizens of the forest. The confusion and lack of clear-cut information has led to the publication of many half-truths and more than a little outright error.

Perhaps, in the level-headed reports on chemicals in management for greater abundance of wildlife, it may be possible to refute many of the fallacies of fact and opinion which have laid hold on so many well-meaning citizens.

We venture to suggest that timely and accurate dissemination of findings like those outlined here may help the agricultural chemical industry to maintain its place in the good graces of the conservation-minded segment of the public. We rather think it will. It is information of this type that should be reaching critics of the pesticide industry to counteract the "scare" stuff being pumped at them from a number of sources.

BIOGRAPH . . .

Prof. A. I. Bourne Retires

With the recent retirement of Arthur I. Bourne, research entomologist at the University of Massachusetts, one of the longest careers among professors at this school came to a close. Mr. Bourne had been associated with the Amherst institution for more than 46 years, according to Dr. Dale H. Sieling, dean of the College of Agriculture.

Professor Bourne joined the University in 1910 as an assistant in the Massachusetts Agricultural Experiment Station. Since that time he has served as assistant entomologist and research professor, as an investigator and professor of entomology.

Since 1930, Mr. Bourne has been head of experiment station entomology, directing this work both at the University and at the substation in

Waltham, Mass. Numerous students have had their indoctrination in practical field work in entomology under him during his long tenure. This work was in the economic field, dealing largely with fruit, cereal and field crop pests.

A native of Kennebunkport, Me., Prof. Bourne spent most of his childhood in Pembroke, N.H., where he was graduated from



Arthur I. Bourne

Pembroke Academy in 1903. He received his A.B. degree from Dartmouth College in 1907 and the following year took up his graduate studies at the University, then Massachusetts Agricultural College. In 1909 he held positions with the Connecticut Agricultural Experiment Station and the then U.S. Bureau of Entomology.

Prof. Bourne has served as co-chairman of the Eastern Pest Control Operators Conference since its inception in 1940. In the same year he was elected to honorary membership in the National Pest Control Association. He had been honored in 1938 by election to the Scientific Honor Society of Sigma Xi. He has also been active in the Entomological Society of America.

Mr. Bourne and his wife, Eliza, plan to remain in Amherst.



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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG

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DONALD NETH

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EXECUTIVE AND EDITORIAL OFFICES—2501 Wayzata Blvd., Minneapolis, Minn. Tel. Federal 2-0575. Bell System Teletype Service at Minneapolis (MP 179), Kansas City (KC 295), Chicago (CG 340), New York (NY 1-2452), Washington, D.C. (WA 82).

Published by

THE MILLER PUBLISHING CO.

2501 Wayzata Blvd., Minneapolis, Minn.

(Address Mail to P. O. Box 67, Minneapolis 1, Minn.)

Associated Publications—THE NORTHWESTERN MILLER, THE AMERICAN BAKER, FEEDSTUFFS, MILLING PRODUCTION

MEETING MEMOS

Jan. 16-17—Shell Nematology Workshop, Biltmore Hotel, New York, Max M. Lowish, Shell Chemical Corp., 460 Park Ave., New York 22, N.Y.

Jan. 23-25—Fertilizer and Lime Salesmen's Conference, Pennsylvania State University, State College, Pa.

Jan. 25—Colorado Agricultural Chemicals Assn., Annual Meeting, Cosmopolitan Hotel, Denver, Frank J. Randall, the C. D. Smith Co., P.O. Box 839, Grand Junction, Colo., Secretary-Treasurer.

EDITOR'S NOTE—The listings above are appearing in this column for the first time this week.

Dec. 27-31—Entomological Society of America, Annual Meeting, Hotel New Yorker, New York City.

1957

Jan. 8-9—Texas Fertilizer Conference, Texas A&M, College Station, Texas.

Jan. 9-10—Eleventh Annual Wisconsin Insect Control Conference, Sponsored by the Entomology Dept., University of Wisconsin, Lorraine Hotel, Madison, Wis.

Jan. 10-11—Annual Pesticide School, North Carolina State College Union, Raleigh.

Jan. 10-11—Mississippi Insect Control Conference, third annual meeting, Mississippi State College, State College, Miss.

Jan. 10-12—Northeastern Weed Control Conference, McAlpin Hotel, New York.

Jan. 15-16—Georgia Plant Food Educational Society, Fourth Annual Meeting, University of Georgia, Athens, Ga., Joint Meeting with Georgia Section, American Society of Agronomy.

Jan. 15-16—Nebraska Fertilizer Institute, Inc., College of Agriculture, University of Nebraska, Lincoln. Howard W. Elm, 917 Trust Bldg., Lincoln, Neb., executive secretary.

Jan. 15-17—North Carolina Pest Control Operators' Short Course, College Union, Raleigh, N.C. Clyde F. Smith, head, Dept. of Entomology.

Jan. 17—Second Annual Western Oregon Fertilizer Dealers Meeting, Withycombe Hall, Oregon State College, Corvallis, Ore.

Jan. 21-25—Pacific Northwest Vegetable Insect Conference and Northwest Cooperative Spray Project, Imperial Hotel, Portland, Ore.

Jan. 22-24—California Weed Conference, Fresno Memorial Auditorium, Fresno, Cal. Conference headquarters, Hotel Californian.

Jan. 23-24—Fourth Annual Pacific Northwest Agricultural Chemicals Industry Conference, Benson Hotel, Portland, Ore., Sponsored by Western Agricultural Chemicals Assn., C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Executive Secretary.

Jan. 23-25—Southern Weed Conference, Bon Aire Hotel, Augusta, Ga.; Walter K. Porter, Jr., Agricultural Experiment Station, Louisiana State University, Baton Rouge, secretary.

Jan. 24-25—Illinois Custom Spray Operators' School, Illinois Union, University of Illinois campus. H. B. Petty, extension entomologist.

Jan. 28-29—National Cotton Council of America, Annual Meeting, St. Louis, Mo.

Jan. 31-Feb. 1-2—Agricultural Aircraft Assn., Annual Convention, Californian Hotel, Fresno, Cal., Wanda Branstetter, Route 3, Box

1077, Sacramento, Executive Secretary.

Feb. 4-6—Cotton States Branch, Entomological Society of America, Birmingham, Ala. W. G. Eden, secretary-treasurer, Alabama Polytechnic Institute, Auburn, Ala.

Feb. 14-15—Middle West Soil Improvement Committee, Edgewater Beach Hotel, Chicago. Zenas H. Beers, 228 N. LaSalle St., Chicago, executive secretary.

Feb. 19-20—Alabama Pest Control Conference and First Annual Meeting of the Alabama Association for the Control of Economic Pests, Auburn, Ala., W. G. Eden, Alabama Polytechnic Institute, Auburn, secretary-treasurer.

Mar. 4-5—Western Cotton Production Conference for 1957, Westward Ho Hotel, Phoenix, Ariz.

March 6-8—National Agricultural Chemicals Assn., Spring Meeting, Fairmont Hotel, San Francisco, L. S. Hitchner, 1145 19th St. N.W., Washington, D.C., Executive Secretary.

March 11-12—Southwestern Branch, Entomological Society of America, Annual Meeting, Gunter Hotel, San Antonio, Sherman W. Clark, 811 Rusk Ave., Houston 2, Texas, Secretary-Treasurer.

March 27-29—North Central Branch of Entomological Society of America, Annual Meeting, Des Moines, Iowa.

June 9-12—National Plant Food Institute, annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 17-19—Fifteenth Annual Convention of the Association of Southern Feed and Fertilizer Control Officials, Dinkler-Tutwiler Hotel, Birmingham, Ala., Bruce Poundstone, Kentucky Agricultural Experiment Station, Lexington, Ky., Secretary-Treasurer.

June 23-26—American Society of Agricultural Engineers, Golden Anniversary meeting, Michigan State University, East Lansing, Mich.

June 26-28—Eighth Annual Fertilizer Conference of the Pacific Northwest, Benson Hotel, Portland, Ore. B. R. Bertramson, Washington State College, Pullman, Wash., chairman.

July 17-19—Southwestern Fertilizer Conference and Grade Hearing, Galvaz Hotel, Galveston, Texas.

Oct. 2-4—Eleventh annual Beltwide Cotton Mechanization Conference, Shreveport, La.

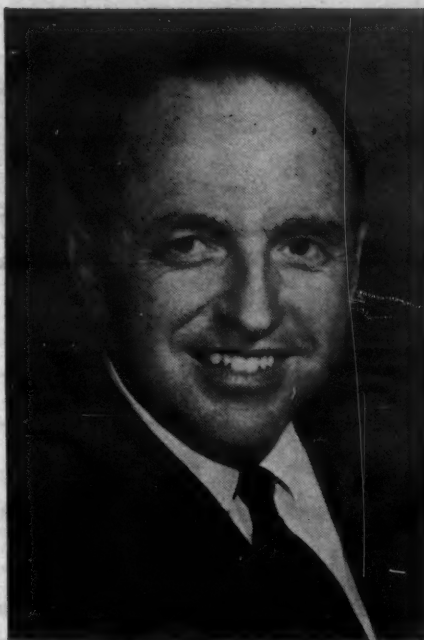
Dorr-Oliver Opens New Office in Baltimore

BALTIMORE, MD. — Dorr-Oliver Inc. has announced the opening of a new office in Baltimore, Md., at 2125 Maryland Ave. The new office will enable the firm to provide better service to engineers and industry in the mid-Atlantic states of Virginia, West Virginia, Maryland and Delaware, the company says.

Sales Engineers Kelsey C. Lindstrom of eastern industrial division and Benjamin F. Rockecharlie of eastern sanitary division have been transferred to the new office from Stamford, Conn. Mr. Lindstrom joined the company in 1952, and Mr. Rockecharlie in October, 1955.

VEGETABLE SHORT COURSE

STATE COLLEGE, N.M.—A course for fruit and vegetable growers will be presented Jan. 17-18 at Milton Hall on New Mexico A&M campus, A. S. Curry, associate experiment station director, who is course chairman, has announced.



Benjamin M. Holt

PROJECT DIRECTOR—Benjamin M. Holt has been appointed to the newly-created post of project director of the planning and development department of American Potash & Chemical Corp., according to an announcement by Daniel S. Dinsmoor, AP&CC vice president in charge of planning and development. In his new position, Mr. Holt will be in charge of special major projects being developed by the company, operating under Mr. Dinsmoor's direction. Mr. Holt formerly was with the Ralph M. Parsons Company prior to his recent joining of American Potash & Chemical Corp.

7 Million Acres in California Sprayed by Air

SAN FRANCISCO, CAL. — More than 7,000,000 acres of California crop and pasture land were treated by agricultural aircraft in 1955.

A new field of agricultural aircraft is opening up along the Pacific Coast, which is exceedingly important to this country's conservation of natural resources—timber spraying.

In Oregon, Washington, and Idaho control of the spruce bud moth which has laid waste to thousands of acres of forestland is falling to the role of the duster and sprayer planes. Greatly increased forest acreage is expected to be sprayed in California during coming years.

Last year in a highly successful experiment 10,000 acres of forest in Yosemite, Cal., were sprayed for insect pest infestation. At present the work is being done in California by some 150 operators with 1,200 planes, but the industry is expanding rapidly.

INDEX OF ADVERTISERS

Allied Chemical & Dye Corp., Nitrogen Division	Mississippi River Chemical Co.
American Potash & Chemical Corp.	Monsanto Chemical Co.
Anco Manufacturing & Supply Co.	National Potash Co.
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Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Classified advertising rate not available for commercial advertising. Advertisements of new machinery, products and services accepted for insertion at minimum rate of \$9 per column inch. All Want Ads cash with order.

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CLASSIFIED ADVERTISING

Water Shortage Makes Bleak Crop Outlook

EL PASO, TEXAS—Farmers in New Mexico and West Texas who depend upon river water for irrigation are facing a bleak crop year in 1957.

Stream flow is perhaps the lowest on record and many of the reservoirs have very little water on storage. The Rio Grande River, which waters an irrigated valley several hundred miles long, is only a small stream now and the big reservoir system of Elephant Butte and Caballo Lakes is almost dry.

The Pecos River flow is also below normal, while Conchas Reservoir in northeastern New Mexico holds only 87,000 acre feet, which is relatively low.

Perhaps even more alarming is the continuous decline of underground water. A few years ago at the outset of the long drought farmers drilled hundreds of wells in the river valleys to supplement the river water. Now many of these wells have weakened and in some places stopped pumping altogether.

Still another problem is the increasing amount of salt. According to a report by Robert L. Gulice, New Mexico A&M College extension soil conservationist, some wells in Southern New Mexico and below El Paso have been abandoned because of the salt content.

A Complete Sales Medium..

CROPLIFE is the only *complete sales medium* directed to the agricultural chemical industry. It is a *weekly newspaper* appealing to all segments of the industry. One of its editorial functions is to knit more closely together all those industry elements—manufacturers, agents, retailers, the educational echelon and farm advisor groups. It does this by:

- Keeping all segments informed of all industry news.
- Providing feature material designed to help manufacturers and mixers to do a better job, to help dealers sell and to help farm advisors and educational people make sound recommendations.
- Keeping all industry alert to current and proposed government action.
- Providing a channel through which news and advertising can reach all segments of the industry.

This new approach to business journalism for the agricultural chemical industry is being made by a company with 80 years of experience in newsgathering and publishing and one which has built an unchallenged reputation for reliability and service. Advertising of your products and services in Croplife will mean *richer sales fields* for you!

National Coverage Weekly . . .

Croplife's carefully controlled circulation provides national weekly coverage of manufacturers, formulators, mixers and ingredient suppliers.

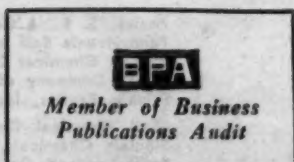
Plus Regional Coverage by Crop-areas . . .

In addition, a unique regional circulation plan provides advertisers with a selective crop-area coverage of wholesale and retail dealers and farm advisory personnel.

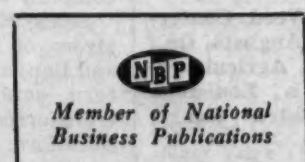


In addition to its national coverage, Croplife offers a selective regional circulation plan in these crop areas

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